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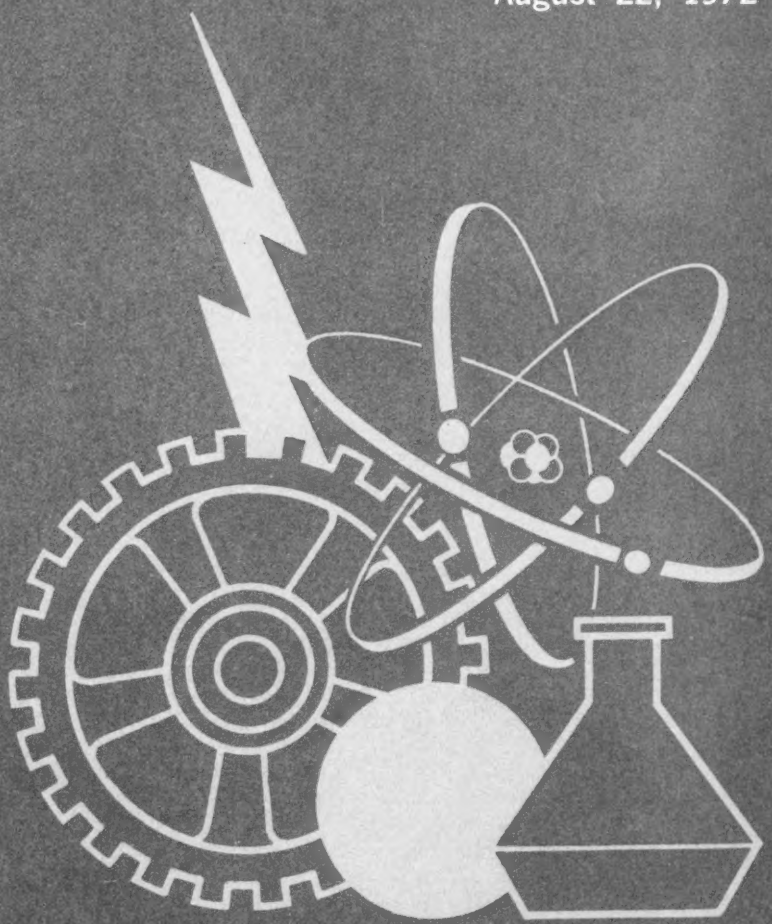
PATENTS

August 22, 1972



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

August 22, 1972 Volume 901 Number 4

CONTENTS

	Page
Patent Notices	
Patent Numbers for Which No Patents Exist	1154
Adverse Decisions in Interferences	1154
Patents Available for Licensing or Sale	1154
Certificates of Correction for the Week of August 22, 1972	1156
Condition of Patent Applications	1157
Reissue Patents Granted	1158
Plant Patents Granted	1159
Patents Granted	
General and Mechanical	1160
Chemical	1360
Electrical	1435
Design Patents Granted	1499
Index of Patentees	PI 1
Indices of Reissues, Plants, and Designs	PI 43
Classification of	
Patents (Including Reissues)	PI 45
Designs and Plants	PI 48
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 49
Designs and Plants	PI 51

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PATENT OFFICE NOTICES

Patent Numbers for Which No Patents Exist

Issue of August 22, 1972

3,685,056	3,685,440	3,685,855	3,686,251
3,685,065	3,685,447	3,685,859	3,686,259
3,685,067	3,685,455	3,685,869	3,686,272
3,685,073	3,685,462	3,685,873	3,686,273
3,685,075	3,685,472	3,685,888	3,686,277
3,685,078	3,685,483	3,685,903	3,686,278
3,685,082	3,685,497	3,685,910	3,686,284
3,685,091	3,685,500	3,685,914	3,686,292
3,685,104	3,685,510	3,685,918	3,686,298
3,685,120	3,685,515	3,685,924	3,686,327
3,685,143	3,685,516	3,685,948	3,686,330
3,685,146	3,685,525	3,685,958	3,686,332
3,685,154	3,685,529	3,685,968	3,686,370
3,685,164	3,685,548	3,685,975	3,686,390
3,685,183	3,685,552	3,685,979	3,686,403
3,685,190	3,685,555	3,685,987	3,686,404
3,685,203	3,685,559	3,685,992	3,686,407
3,685,207	3,685,563	3,686,005	3,686,417
3,685,225	3,685,566	3,686,029	3,686,424
3,685,236	3,685,578	3,686,032	3,686,426
3,685,246	3,685,585	3,686,033	3,686,427
3,685,247	3,685,590	3,686,037	3,686,509
3,685,255	3,685,595	3,686,039	3,686,526
3,685,260	3,685,605	3,686,044	3,686,537
3,685,274	3,685,628	3,686,053	3,686,546
3,685,275	3,685,639	3,686,063	3,686,562
3,685,299	3,685,641	3,686,065	3,686,610
3,685,304	3,685,672	3,686,074	3,686,611
3,685,307	3,685,688	3,686,086	3,686,615
3,685,312	3,685,698	3,686,104	3,686,620
3,685,318	3,685,699	3,686,152	3,686,636
3,685,326	3,685,704	3,686,157	3,686,638
3,685,349	3,685,709	3,686,175	3,686,642
3,685,351	3,685,713	3,686,179	3,686,643
3,685,374	3,685,750	3,686,195	3,686,646
3,685,381	3,685,758	3,686,197	3,686,647
3,685,386	3,685,763	3,686,205	3,686,648
3,685,387	3,685,768	3,686,208	3,686,651
3,685,390	3,685,769	3,686,209	3,686,652
3,685,407	3,685,774	3,686,212	3,686,663
3,685,410	3,685,776	3,686,221	3,686,664
3,685,411	3,685,813	3,686,227	3,686,677
3,685,415	3,685,816	3,686,228	3,686,685
3,685,417	3,685,822	3,686,234	3,686,688
3,685,421	3,685,834	3,686,242	
3,685,422	3,685,848	3,686,247	

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,233,721, H. Martin, H. Aebi and L. Ebner, 1-(4-BROMOPHENYL), 3-METHOXY, 3-METHYL-UREA, decided Oct. 15, 1968, Interference No. 95,460, claim 1.

Patent No. 3,292,060, E. Schatter and K. Schwarz, VARIABLE CAPACITOR, decided June 30, 1972, Interference No. 97,870, claims 1, 2, 3 and 6.

Patent No. 3,308,157, J. E. Robertson and J. A. Skorcz, N - (BENZOCYCLOBUTENE-1-LOWERALKYL) - CARBOXYLIC ACID AMIDES, decided Mar. 31, 1972, Interference No. 96,856, claim 2.

Patent No. 3,319,234, Y. J. F. Brette, MATRIX MEMORY DEVICE, decided Feb. 25, 1972, Interference No. 97,175, claims 1, 2 and 5.

Patent No. 3,321,479, G. G. Eberhardt and W. A. Butte, Jr., PREPARATION OF ORGANOLITHIUM AMINE COMPLEXES, decided Mar. 10, 1972, Interference No. 96,535, claims 1, 2, 5, 6, 10, 11, 15, 16, 20 and 22.

Patent No. 3,338,709, A. J. Baker and F. J. Lauta, AGE HARDENABLE LOW ALLOY STEELS, decided June 1, 1972, Interference No. 96,840, claim 1.

Patent No. 3,383,743, H. L. Cotton, PIPE BENDING APPARATUS AND METHOD, decided Mar. 6, 1972, Interference No. 97,178, claims 1, 2 and 3.

Patent No. 3,389,188, W. A. Michalowicz, PROCESS FOR PREPARING ANTHRACENE FROM PHENANTHRENE, decided Mar. 10, 1972, Interference No. 96,853, claim 5.

Patent No. 3,478,857, J. T. Linker, KEYBOARD PUSH-BUTTON RETURN SPRING, decided June 8, 1972, Interference No. 97,761, claims 1, 2 and 5.

Patents Available for Licensing or Sale

3,533,625. SEARCH AND DESTROY TOY. Albert A. and Steven A. Kossor, 13 N. 12th St., Kenilworth, N.J., 07033.

3,581,321. BED-MAKING APPARATUS. William M. Geary, 9347 Crawford Ave., Evergreen Park, Ill. 60642.

3,591,925. LINE ANGLE DEGREE LEVEL INSTRUMENT. Frank Dupin, Box 109, Gurnee, Ill., 60031.

3,616,248. PROCESS FOR THE SEPARATION OF YEAST FROM YEAST-OIL-WATER SOLUTIONS. Deutsche Akademie der Wissenschafter, Berlin, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,621,967. LIQUID EMMISSION TYPEWRITER. Irving I. Brown. 3115 Brighton 6th St., Brooklyn, N.Y., 11235.

3,624,350. TURBO-ELECTRIC FURNACE. Fred E. Sanders, 503 E. 108th St., Cleveland, Ohio, 44108.

3,633,717. TRANSMISSION IDLER AND CLUTCH. Virgil Stair, 14826 Enadia Way, Van Nuys, Calif., 91405.

3,642,724. PROCESS OF MAKING UNSATURATED POLYESTERS OF LOW FLAMMABILITY AND PRODUCT OBTAINED THEREBY. Dr. Beck & Co., Ag., Hamburg, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION THEREOF. Donald L. Segur et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corp., Research Center, High St., North Billerica, Mass., 01862.

3,657,474. PSYCHELDELIC DEVICE ATTACHABLE TO FRONT OF TELEVISION TUBE. Paul H. Turnrose, 84 Overlook Ave., Forestville, Conn., 06010.

3,659,986. APPARATUS FOR MAKING CONCRETE PRODUCTS. Nathan L. Gelbman, 17201 N.E. 4th Ave., North Miami Beach, Fla., 33162.

3,672,073. TEACHING APPARATUS. Felix Pilorusso, Vancouver, Canada. Correspondence to: Fetherstonhaugh & Co., 789 W. Pender St., Vancouver 1, Canada.

3,668,805. FLAT DOLL. Patricia A. Coleman, 820 W. Avenue A, Elk City, Okla., 73644.

3,668,809. BEVELING ATTACHMENT FOR BELT SANDERS. James A. Coon, 929 Drever St., West Sacramento, Calif., 95691.

3,669,202. FOUR WHEEL DRIVE VEHICLE. Leslie Anderson, Monroe, Wash., 98212.

3,669,322. MEASURING AND DISPENSING CONTAINER. Andrew C. Popivalo, 2028 Webster St., Sanger, Calif., 93657.

The following 2 patents are offered by: Orrin M. Haugen, 502 Midwest Plaza Building, Minneapolis, Minn., 55402.

3,602,054. CHAIN AND BELT TIGHTENER.

3,664,104. FRUITS AND NUTS PICKING DEVICE.

The following 2 patents are offered by: William B. Brown, 2633 SE. 29th St., Topeka, Kans., 66605.

3,573,862. VEHICLE WASHING APPARATUS.

3,606,895. VEHICLE WASHER AND DRIER.

General Motors Corporation is prepared to grant non-exclusive licenses under the following 4 patents upon reasonable terms.

Application for license may be addressed to: The Director, Patent Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,495,404. FLUID DELIVERY CONTROL SYSTEM.

3,503,278. VEHICLE DRIVE & STEER SYSTEM WITH POWER BOOST.

3,504,564. EXTERNAL FINAL DRIVE DISCONNECT.

3,520,210. VARIABLE RATIO STEER LINKAGE.

General Electric Company is prepared to grant non-exclusive licenses under the following 29 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,660,721. PROTECTIVE EQUIPMENT FOR AN ALTERNATING CURRENT POWER DISTRIBUTION SYSTEM.

Applications for license under the following 28 patents may be addressed to: General Electric Company, Automation Business Div., 3001 E. Lake Road, Erie, Pa., 16501. Attention: Patent Counsel.

2,789,238. FLAME ARRESTOR FOR DYNAMOELECTRIC MACHINES.

2,791,667. AUTOMATIC BRAZING APPARATUS AND METHOD.

2,840,732. BRUSH HOLDER CLAMPING ARRANGEMENT.

2,840,733. BRUSH HOLDER AND SPRING ASSEMBLY.

2,840,734. SPRING ASSEMBLY FOR CARBON BRUSH HOLDER.

2,845,795. DYNAMOMETER.

2,862,123. BRUSH HOLDER AND RIGGING ASSEMBLY.

2,932,542. DYNAMOMETER TRUNNION BEARING.

2,959,564. UNSATURATED POLYESTER-DIALLYL ISOPHTHALATE COMPOSITIONS.

3,020,427. VENTILATION OF DYNAMOELECTRIC MACHINE DRIVE UNITS.

3,051,859. INTERDIGITATED POLE ASSEMBLY.

3,089,971. BEARING ARRANGEMENT FOR EDDY CURRENT COUPLING.

3,182,383. ELECTROMAGNETIC CONSTRUCTION.

3,359,631. METHOD OF MAKING ELECTRICAL MEMBERS.

3,365,600. DYNAMOELECTRIC MACHINE END TURN INSULATION PROTECTION SYSTEM.

3,414,856. INSULATED ELECTRICAL CONDUCTOR.

3,420,588. BEARINGS OF THE RING-OILED TYPE.

3,436,577. BRUSH HOLDER CONSTRUCTION.

3,466,480. DYNAMOELECTRIC MACHINE.

3,485,789. PULVERULENT COATING COMPOSITIONS AND FLUIDIZED BED COATING FLUID.

3,488,055. COMMUTATOR AND BRUSH COOLING APPARATUS.

3,488,836. METHOD OF MAKING STATORS FOR DYNAMOELECTRIC MACHINES OF THE PERMANENT MAGNET TYPE.

3,526,797. STABILIZING SPRING ASSEMBLY FOR BRUSH HOLDER.

3,541,043. METHOD OF DRY BLENDING AN AGGLOMERATED MATERIAL WITH A POWDERED MATERIAL.

3,576,456. TRANSIENT LEAKAGE FLUX BARRIER FOR D-C DYNAMOELECTRIC MACHINES.

3,585,398. BRUSHLESS EXCITATION OF A STEAM TURBINE GENERATOR UTILIZING A DRIVER ACYCLIC GENERATOR.

3,648,089. COMMUTATING FLUX FIDELITY IMPROVEMENT WINDING.

3,665,274. REVERSIBLE MOTOR CONTROL HAVING ALTERNATIVELY OPERATIVE DUAL AMPLIFIERS AND AUTOMATIC RESPONSE ADJUSTMENT.

The RCA Corporation offers to grant non-exclusive licenses on reasonable and conditions under the following 39 patents.

Inquiries respecting licenses under the following patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,667,841. METHOD OF AND APPARATUS FOR REPRODUCING A COLORED IMAGE BY ELECTROPHOTOGRAPHIC MEANS.

3,668,463. RASTER CORRECTION CIRCUIT UTILIZING VERTICAL DEFLECTION SIGNALS AND HIGH VOLTAGE REPRESENTATIVE SIGNALS TO MODULATE THE VOLTAGE REGULATOR CIRCUIT.

3,668,475. KINESCOPE SOCKET.

3,668,484. SEMICONDUCTOR DEVICE WITH MULTILEVEL METALIZATION AND METHOD OF MAKING THE SAME.

3,668,561. FIELD EFFECT TRANSISTOR MODULATOR CIRCUIT.

3,668,563. BROADBAND CIRCULATOR WHEREIN DIFFERENTIAL PHASE SHIFT VARIES WITH FREQUENCY IN PREDETERMINED MANNER.

3,668,580. TOROIDAL DEFLECTION YOKE HAVING ASYMMETRICAL WINDINGS.

3,668,581. METHOD OF ENERGIZING FULLY PERSISTENT, HIGH FIELD, HIGH HOMOGENEITY MAGNETS.

3,668,668. TRANSDUCING HEAD MOUNT APPARATUS.

3,668,770. METHOD OF CONNECTING SEMICONDUCTOR DEVICE TO TERMINALS OF PACKAGE.

3,669,673. RECORDING OF A CONTINUOUS TONE FOCUSED IMAGE ON A DIFFRACTION GRATING.

3,669,733. METHOD OF MAKING A THICK-FILM HYBRID CIRCUIT.

3,669,734. METHOD OF MAKING ELECTRICAL CONNECTIONS TO A GLASS-ENCAPSULATED SEMICONDUCTOR DEVICE.

3,669,735. METHOD FOR ACTIVATING A SEMICONDUCTOR ELECTRON EMITTER.

3,669,770. METHOD OF MAKING ABRASION-RESISTANT METAL-COATED GLASS PHOTOMASKS.

3,669,774. LOW TEMPERATURE SILICON ETCH.

3,670,153. MACHINE IMPLEMENTED METHOD FOR POSITIONING AND INSPECTING AN OBJECT.

3,670,179. ELECTRICAL CIRCUIT.

3,670,249. SAMPLING DECODER FOR DELAY MODULATION SIGNALS.

3,671,667. SPECIAL EFFECTS GENERATORS FOR PROVIDING IRIS-TYPE TELEVISION DISPLAYS.

3,671,768. HIGH SPEED SET-RESET FLIP-FLOP.

3,671,778. SWITCHING CIRCUITS.

3,671,782. SAMPLE-HOLD AND READ CIRCUIT.

3,671,881. RESETTABLE LOGIC GATE MULTIVIBRATOR.

3,672,014. METHOD OF MOUNTING A MASS IN A CATHODE-RAY TUBE USING RETRACTABLE SPACING UNITS.

3,672,020. METHOD OF MAKING A HEAT PIPE HAVING AN EASILY CONTAMINATED INTERNAL WETTING SURFACE.

3,672,746. DIGITAL LIGHT DEFLECTOR USING OPTICAL RESONATORS.

3,672,763. ELECTROSTATIC PRINTING APPARATUS.

3,672,925. METHOD OF PREPARING A SUBSTRATE FOR DEPOSITING A METAL ON SELECTED PORTIONS THEREOF.

3,672,932. PROCESS FOR SCREENING CATHODE RAY TUBES INCLUDING SALVAGING OF EXCESS PHOSPHOR SLURRY.

3,673,018. METHOD OF FABRICATION OF PHOTOMASKS.

3,673,318. VIDEO BLANKING AND SOUND MUTING CIRCUIT.

3,673,320. TELEVISION APPARATUS RESPONSIVE TO A TRANSMITTED COLOR REFERENCE SIGNAL.

3,673,428. INPUT TRANSIENT PROTECTION FOR COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT DEVICE.

3,673,498. GAIN CONTROLLED CASCODE-CONNECTED TRANSISTOR AMPLIFIER.

3,673,499. COMBINED TUNING AND SIGNAL STRENGTH INDICATOR CIRCUIT WITH SIGNAL STRENGTH INDICATION DERIVED FROM EACH IF AMPLIFYING STAGE.

3,673,505. SYNCHRONOUS DEMODULATOR EMPLOYING A COMMON-BASE TRANSISTOR AMPLIFIER INPUT.

3,673,573. COMPUTER WITH PROGRAM TRACING FACILITY.

3,673,582. BUBBLE DOMAIN SONIC PROPAGATION DEVICE.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 39 patents.

Applications for licenses may be addressed to: The Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

Re. 26,789. SLIDE TRAY INDEXING MECHANISM AND CONTROL THEREFOR.

3,319,370. SLIDE TRAY INDEXING MECHANISM.

3,494,268. PHOTOGRAPHIC CAMERA HAVING A FLASHCUBE SOCKET.

3,506,212. REEL WITH ATTACHED FILM RETAINING MEANS.

3,527,150. FLASH CAMERA.

3,537,368. FLASH UNIT FOR PHOTOGRAPHIC PURPOSE.

3,550,877. CATRIDGE AND METHOD FOR REMOVING FILM FROM THE CARTRIDGE.

3,552,287. PHOTOFLASH LAMP FIRING MECHANISM.

3,554,462. CARTRIDGE.

3,556,784. ELECTROSTATIC IMAGE DEVELOPMENT.

3,574,630. STABILIZATION OF AQUEOUS SOLUTIONS OF CERTAIN DYES.

3,581,637. DEVICE FOR IGNITING PERCUSSION-IGNITABLE FLASH LAMP.

3,581,638. PHOTOGRAPHIC APPARATUS.

3,581,639. SHUTTER SYNCHRONIZED FLASH UNIT.

3,583,655. CARTRIDGE-LOADED PROJECTOR OR THE LIKE.

3,584,551. MECHANISM FOR RETAINING A PERCUSSION-IGNITABLE FLASHLAMP UNIT.

3,584,552. INDEXING MECHANISM FOR A FLASH CAMERA.

3,584,554. APPARATUS FOR ACTUATING FIRING OF PERCUSSION - IGNITABLE FLASHLAMPS AND OPERATING MECHANISM THEREFOR.

3,585,195. STABILIZATION OF AQUEOUS SOLUTIONS OF CERTAIN ACID SUBSTITUTED SPECTRAL SENSITIZING DYES.

3,588,300. SPRING MECHANISM FOR PERCUSSIVELY IGNITABLE FLASHLAMPS.

3,589,636. SPINDLE CONSTRUCTION AND MEANS FOR LOCATING A CARTRIDGE WITH RESPECT TO MOTION PICTURE PROJECTOR OR THE LIKE.

3,589,849. DAMPENING CONTROL DEVICE FOR PERCUSSIVE PHOTOFLASH FIRING MECHANISM.

3,590,706. ADAPTER FOR IGNITING PERCUSSION-IGNITABLE FLASHLAMP UNITS.

3,596,581. PHOTOGRAPHIC APPARATUS FOR FIRING PERCUSSION - IGNITABLE FLASHLAMP UNITS.

3,598,031. PHOTOGRAPHIC CAMERA WITH MEANS FOR VARYING A FOCUS ADJUSTMENT TO PHOTOGRAPH AN ARTIFICIALLY ILLUMINATED SUBJECT.

3,602,119. DRIVE MECHANISM FOR ROTATABLE FLASHCUBE SOCKET.

3,602,120. MECHANISM FOR USE WITH PHOTOGRAPHIC APPARATUS TO AUTOMATICALLY CONTROL FLASH IN RESPONSE TO SCENE BRIGHTNESS.

3,603,529. ADJUSTABLE SPINDLE ARM FOR CARTRIDGE LOADING MOTION-PICTURE PROJECTOR.

3,614,223. LIQUID GATE.

3,617,013. CARTRIDGE.

3,622,101. INTEGRAL ANTIBACKUP MECHANISM IN A MOTION PICTURE FILM CARTRIDGE.

3,624,726. FLASH-FIRING AND SENSING MECHANISM FOR CAMERA OR ATTACHMENT ADAPTED TO USE PERCUSSIVELY FIREABLE FLASHLAMPS.

3,624,727. SOCKET PERCUSSIVELY IGNITABLE MULTIPLE-LAMP FLASHBULB UNITS.

3,630,129. CAMERA MECHANISM FOR ACTUATING MECHANICALLY FIREABLE FLASH UNITS.

3,630,131. FLASHBULB INDEXING MECHANISM.

3,640,196. PHOTOGRAPHIC APPARATUS FOR MECHANICALLY ACTUABLE PHOTOFLASH UNITS.

3,646,864. FLASHLAMP - SENSING AND PERCUSSIVE-FIRING MECHANISM FOR PHOTOGRAPHIC APPARATUS.

3,648,952. CARTRIDGE.

3,651,745. FLASH DEVICE FOR CINEMATOGRAPHIC CAMERA.

Certificates of Correction for the Week of Aug. 22, 1972

PP. 3,122	3,628,911	3,637,663	3,649,244
Re. 27,264	3,629,107	3,637,676	3,649,331
3,445,847	3,629,303	3,637,801	3,649,446
3,449,117	3,631,728	3,637,821	3,649,553
3,524,272	3,632,071	3,638,141	3,649,599
3,541,270	3,632,393	3,638,180	3,649,714
3,551,651	3,632,396	3,638,190	3,649,827
3,558,261	3,632,469	3,638,701	3,650,787
3,562,295	3,632,495	3,638,704	3,650,928
3,574,625	3,632,874	3,639,304	3,651,010
3,574,929	3,633,241	3,639,488	3,651,488
3,582,825	3,633,260	3,639,636	3,652,054
3,584,233	3,633,766	3,640,211	3,652,068
3,587,788	3,633,833	3,640,320	3,652,884
3,588,871	3,634,105	3,640,412	3,653,337
3,594,818	3,634,236	3,641,188	3,653,418
3,595,618	3,634,258	3,641,208	3,653,847
3,596,075	3,634,272	3,641,461	3,653,876
3,597,480	3,634,293	3,641,557	3,653,930
3,599,628	3,634,371	3,642,578	3,654,029
3,603,941	3,634,831	3,642,699	3,654,031
3,606,968	3,634,844	3,642,992	3,654,102
3,607,290	3,635,105	3,643,077	3,654,155
3,609,540	3,635,497	3,643,189	3,654,271
3,613,982	3,635,872	3,643,566	3,654,460
3,615,787	3,635,974	3,643,736	3,654,628
3,616,020	3,636,566	3,645,686	3,654,731
3,617,512	3,636,573	3,645,710	3,654,784
3,620,747	3,636,576	3,646,001	3,654,842
3,622,316	3,636,664	3,646,206	3,655,078
3,624,373	3,636,668	3,646,313	3,655,090
3,624,456	3,636,845	3,646,317	3,655,223
3,624,780	3,636,965	3,646,519	3,655,660
3,624,992	3,636,983	3,646,682	3,655,856
3,626,098	3,637,014	3,646,890	3,656,090
3,626,723	3,637,026	3,646,990	3,656,289
3,626,877	3,637,114	3,647,286	3,656,541
3,627,091	3,637,145	3,647,371	3,657,330
3,627,370	3,637,161	3,647,504	3,657,600
3,627,373	3,637,344	3,647,849	3,657,610
3,628,070	3,637,383	3,647,976	3,657,706
3,628,083	3,637,397	3,649,116	3,660,128
3,628,152	3,637,471	3,649,172	3,660,439
3,628,157	3,637,501	3,649,192	3,660,576
3,628,760	3,637,505	3,649,226	3,663,561

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 8, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-28-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating: Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-02-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-23-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-01-71
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-25-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-02-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-12-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-08-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-19-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-03-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-03-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	7-22-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-23-71

Expiration of patents: The patents within the range of numbers indicated below expire during August 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,714,207 to 2,716,747, inclusive
Plant Patents..... Numbers 1,408 to 1,416, inclusive

REISSUES

AUGUST 22, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,464

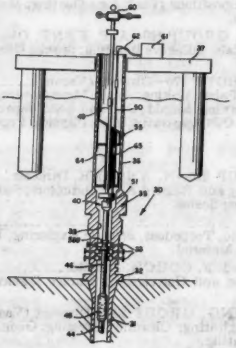
WELL TOOLS

Donald F. Taylor, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Original No. 3,411,576, dated Nov. 19, 1968, Ser. No. 469,978, July 2, 1965. Application for reissue Nov. 10, 1969, Ser. No. 871,492

Int. Cl. E21b *33/35*

U.S. Cl. 166—.5 44 Claims



An apparatus and method for controlling flow in a well after the same has been drilled, particularly adaptable for submarine wells.

The invention is directed toward well flow conductor installation utilizing equipment, such as blow-out preventers, installed on the well during the drilling thereof to support a flow conductor and flow control valve for controlling flow and performing operations on the well after the same has been drilled, together with an improved flow conductor support, connector and flow control valve, which are designed to provide means to quickly close in the well to prevent undesired flow from the well, and to provide automatic blow-out prevention.

27,465

COMPLEXES OF $B_9H_{14}^-$ OR $B_9H_{12}S^-$ WITH SELECTED METALS AND PHOSPHINES

Frank K. Klanberg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original No. 3,450,733, dated June 17, 1969, Ser. No. 601,326, Dec. 13, 1966. Application for reissue Feb. 26, 1971, Ser. No. 119,424

Int. Cl. C07f *1/08, 1/10, 1/12*

U.S. Cl. 260—430 7 Claims

Complexes of selected metals, phosphines, and one of the anions $B_9H_{14}^-$ or $B_9H_{12}S^-$ wherein the metal is copper, silver or gold and the organic group of the phosphine is [aryl or alkaryl.] *phenyl.* These complexes are prepared by reacting a salt of the polyboron anion with a salt of the metal in the presence of the phosphine and an inert solvent. The compounds are useful as metal film-plating agents.

27,466

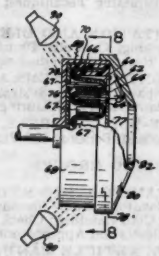
METHOD OF MANUFACTURING PLEATED FILTERS

Nils O. Rosaen, Bloomfield Hills, Borje O. Rosaen, Ann Arbor, and Oscar E. Rosaen, Grosse Pointe, Mich., assignors to Universal Filters, Inc., Hazel Park, Mich.

Original No. 3,389,031, dated June 18, 1968, Ser. No. 532,232, Mar. 7, 1966. Application for reissue Sept. 30, 1969, Ser. No. 868,247

Int. Cl. B32b *31/16*

U.S. Cl. 156—74 13 Claims



A method of manufacturing flat pleated filter elements for fluid systems including the steps of forming a fluid pervious material such as perforated metal or the like into a plurality of pleats, overlaying the surface of the perforated material with a sheet of nylon, providing rods at the inside of the bends to hold the nylon against the perforated material and then molding [a thermosetting] frame around the periphery of nylon and perforated member to hold these members together.

PLANT PATENTS

GRANTED AUGUST 22, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,258
MAPLE TREE

John H. McIntyre, Gresham, Oreg., assignor to The W. E. McGill Trust, doing business as A. McGill and Son, Fairview, Oreg.

Filed Nov. 5, 1970, Ser. No. 87,363
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of maple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a more profuse branching habit than is normal for the species botanically known as *Acer platanoides* and commercially known as "Crimson King," with all branches being of an upright nature and making the tree a fastigiate or columnar type, smaller leaves than those typical of "Crimson King," and said leaves being more cupped in form, and although the leaves are 5-lobed, the lower 2 lobes are very small and make the leaves appear 3-lobed in effect.

3,259
LINDEN TREE

John H. McIntyre, Gresham, Oreg., assignor to The W. E. McGill Trust, doing business as A. McGill and Son, Fairview, Oreg.

Filed Nov. 5, 1970, Ser. No. 87,364
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of linden tree of the species botanically known as *Tilia cordata,* substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a strong growing habit, a larger leaf size than is normal for the species *Tilia cordata,* a heavier than normal leaf thickness, and a distinctive, attractive and darker than normal green leaf color.

3,260
HONEY LOCUST TREE

John H. McIntyre, Gresham, Oreg., assignor to The W. E. McGill Trust, doing business as A. McGill and Son, Fairview, Oreg.

Filed Nov. 5, 1970, Ser. No. 87,365
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—52 **1 Claim**

1. A new and distinct variety of honey locust tree of the species botanically known as *Gleditsia triacanthos inermis,* substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a strong growing habit which makes the trees approximately 20% taller than is average for the species in the first year of growth and continuing thereafter, a habit of carrying the leaflets at a more acute angle to the stem in a plane at right angles to the stem than is normal for the species, a twisted form of the leaflets when young and until they mature which gives the leaves a ruffled or rippled appearance, and a distinctive, attractive and darker green leaf color than is average for the species.

3,261
DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed Mar. 5, 1971, Ser. No. 121,607
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—51 **1 Claim**

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a sturdy, graceful, upright arching, vase-shaped habit of growth, smooth exfoliating bark, attractive yellowish-green leaves which turn bright deep red in autumn and are retained on the tree as one of the last of the deciduous trees to drop its leaves, large showy, neat flowers, which are composed of broadly based overlapping bracts which curve to pointed tips and remain slightly cupped and present a crisp sculptured appearance throughout the flowering season which begins early in the month of June and extends well into July in Massachusetts, a distinctive and attractive flower color which is a creamy white color when the flowers first appear and then turning pure white in a few days, but sometimes having a pale pink tinge when opening and again when ready to drop, large attractive and longlasting fruit which gradually turn in color from yellow-green, to yellow, to orange and then to bright red until the fruit drops, with some fruit in these various color stages being on the tree at the same time throughout most of the season, excellent hardiness to at least —20° F. without injury, and especial suitability for planting in patios, lawns, alleys, and to flank features of special interest.

PATENTS

GRANTED AUGUST 22, 1972

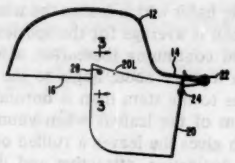
GENERAL AND MECHANICAL

3,685,054

APPARATUS FOR MOUNTING A FACE SHIELD ONTO A RIGID HAT

Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Filed Oct. 7, 1968, Ser. No. 765,602
Int. Cl. A61f 9/04
U.S. Cl. 2—10 **3 Claims**



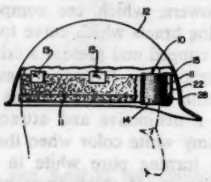
A face shield for removable installation on a rigid hat or safety helmet. Mounting apparatus that is self-contained on the face shield and that is formed by one or more resilient clips in combination with a pair of mounting studs that are positioned on the face shield for engagement into chin strap holes present in safety helmets.

3,685,055

SWEATBAND-HARNESS ASSEMBLY

James V. Militello, Williamsville, N.Y., assignor to American Allsafe Company, Inc., Buffalo, N.Y.

Filed March 16, 1970, Ser. No. 19,810
Int. Cl. A42b 3/00; A42c 5/02
U.S. Cl. 2—181.4 **8 Claims**



A sweatband-harness assembly comprising an elongated sponge, a plastic harness attached thereto with the harness having a plurality of runners extending longitudinally of the sponge and a plurality of spaced straps extending transversely from the harness and beyond the opposite side edges of the sponge, and a gauze-like fabric on the opposite side of the harness from the sponge, with the harness, sponge and gauze secured to each other by stitching.

3,685,056

Patent Not Issued For This Number

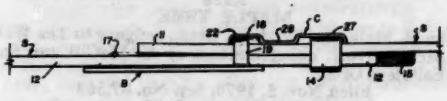
3,685,057

ATTACHMENT OF BELT BUCKLES TO BELTS

George P. Foy, 635 S. Clinton St. Apt. B-1, Denver, Colo.

Filed March 12, 1971, Ser. No. 123,558
Int. Cl. A41f 9/02
U.S. Cl. 2—325 **7 Claims**

A belt buckle having an offset bar and an inside hook for engaging one of a series of spaced holes in the free end of a belt, is attached to the fixed end of the belt, which has a series of spaced slots, by a clip which has a land engageable with the inside of the bar, which encircles the fixed end of the belt. The clip also has a leg which abuts the bar and extends through a selected slot, with a forward tab on the inner end of the leg, to restrain the leg from pulling through the slot. Between this land and a rear leg, having a rearward tab and extends through



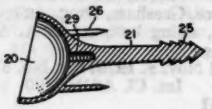
the second slot from the selected slot, are a longer land for holding a loop for the free end of the belt, a valley which presses against the inside of the fixed end of the belt and inclined legs connecting the valley with the respective lands. Through the use of the clip, one length of belt stock may be utilized for several sizes of belts, merely by adjusting the clip to different slots.

3,685,058

HIP PROSTHESIS

Raymond G. Tronzo, 247 Winding Way, Merion Station, Pa.

Continuation-in-part of Ser. No. 67,475, Aug. 27, 1970, abandoned. This application Oct. 19, 1970, Ser. No. 81,936
Int. Cl. A61f 1/24
U.S. Cl. 3—1 **4 Claims**



In a hip prosthesis, a socket is supported on a nail protruding from the back of the socket and adapted to enter the acetabulum. The socket axis is disposed off center with respect to the axis of the nail towards the outside of the body approximately 20°. In line with the nail, the socket has a threaded bore which cooperates with a threaded extension on the end of a driver and the driver in the preferred embodiment has a plastic ball which engages the socket. The ball which engages the socket for operation of the hip joint is of plastic, preferably high density polyethylene, and rotates on a pin which is supported in the femur by a nail. The axis of the pivot pin is preferably 145° from the axis of the femur nail.

3,685,059

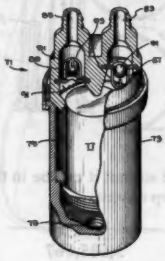
PROSTHETIC BLOOD CIRCULATION DEVICE HAVING A PYROLYTIC CARBON COATED BLOOD CONTACTING SURFACE

Jack C. Bokros, San Diego, and Willard H. Ellis, Leucadia, both of Calif., assignors to Gulf General Atomic Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 649,811, June 29, 1967, Pat. No. 3,526,005, Continuation-in-part of Ser. No. 821,080, May 1, 1969. This application July 28, 1970, Ser. No. 58,921
Int. Cl. A61f 1/22, 1/24
U.S. Cl. 3—1 **14 Claims**

A prosthetic device for implantation in or use with a living body. A substrate is coated with impermeable pyrolytic carbon which provides an inert and antithrombogenic outer surface. The conditions at which the pyrolytic carbon is

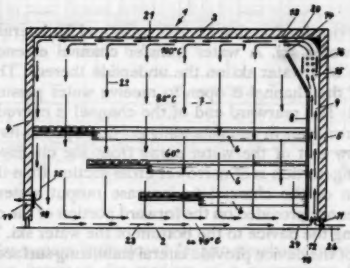
deposited are controlled to match the thermal coefficient of expansion of the pyrolytic carbon to that of the substrate and to provide a strong carbon which contributes substantial structural strength to the composite prosthetic device. The carbon is preferably isotropic and may be doped with a suitable carbide-forming element, such as silicon, to provide additional structural strength and wear resistance. Devices having such coatings on the portions coming in contact with blood are valuable for extracorporeal circulation of the bloodstream of a human patient.



3,685,060
SAUNA CABIN

Paul Bemberg, Gittinger Weg. 1/1, Postfach 140, D-7128 Lauffen/Neckar, Germany

Filed May 7, 1970, Ser. No. 35,511
Claims priority, application Germany, May 8, 1969, G 69 18 696.5; Austria, April 29, 1970, A 3927/70
Int. Cl. A61n *33/06*; **H05b** *1/00, 3/02, 11/00*; **F24h** *9/02*
U.S. Cl. 4—160 **24 Claims**



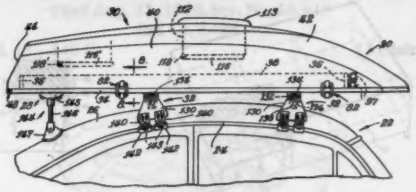
A sauna cabin in which the air, heated by a heater, enters the sauna cabin within the area of the ceiling and, after being cooled off, is conducted again to the heater by way of an opening within the area of the floor, the heater is thereby preferably arranged in a shaft formed by a covering panel disposed at a small distance from an outer wall of the sauna cabin.

3,685,061
CAR TOP CAMPER-BOAT

James D. Wray, 3040 Harrison St., Glenview, Ill.

Filed June 29, 1970, Ser. No. 50,549
Int. Cl. B60r *9/04*
U.S. Cl. 5—119 **14 Claims**

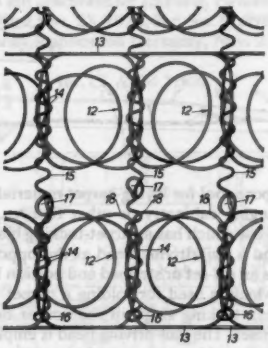
A camper-boat combination adapted to be carried on the top of an automobile and including a base portion having attaching brackets for securing the unit to the rain gutters of the automobile, an upper rigid shell portion releasably hingedly connected at one end to the base portion and adapted to be raised to define a sleeping compartment, and side panels for enclosing the sleeping compartment, the upper rigid shell being removable for use as a pleasure boat.



3,685,062
SPRING INTERIORS FOR MATTRESSES, SEATS AND THE LIKE

George H. Pearson, "Corner Gate" High Park Avenue, Wollaston, Stourbridge, Worcestershire, England, assignor to Slumberland Group Limited, Tyseley, Birmingham, England

Filed May 11, 1970, Ser. No. 36,203
Claims priority, application Great Britain, May 13, 1969, 24,218/69
Int. Cl. B21f *27/16, 33/04*
U.S. Cl. 5—269 **9 Claims**



In the manufacture of spring interiors for mattresses, seats and the like a plurality of springs are linked together by helical wires which are rotated and advanced much in the manner of screws. In order to prevent the helical wires becoming unlinked stops are formed by distorting the helical wires at positions spaced from their ends. Each stop preferably comprises a closed loop, and this preferably embraces a wire of an adjacent spring.

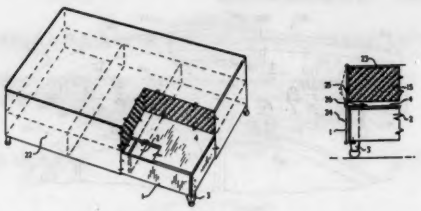
3,685,063
FURNITURE

Leslie Morgan, Ottawa, Ontario, Canada, assignor to Morgan Leslie Furniture Limited, Ontario, Canada

Filed July 30, 1970, Ser. No. 59,574
Int. Cl. A47c *4/02, 23/00*
U.S. Cl. 5—345 **2 Claims**

Furniture such as chairs, sofas, chesterfields and sleeping units constructed mainly of plywood and foam rubber wherein a plywood deck coextensive with and supported by a rectangular plywood frame carries a slab of foam rubber that is coextensive with and cemented to the said deck, the foam rubber slab designed to support the body of the user being of suitable density and firmness. For seating articles, a back rest assembly of plywood is constructed and faced with foam rubber and

bolted to the deck of the base and arms of plywood are likewise faced with foam rubber and attached to the base frame and back rest. Where the article of furniture is to serve

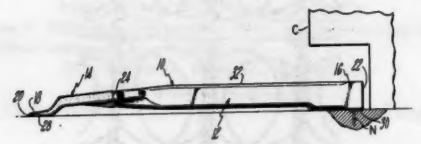


as a sleeping unit, the foam rubber slab mounted on the base deck may be cemented thereto over the entire area of the deck or a perimetral strip area of the slab may be left free of attachment.

3,685,064
CARPET TOOL

John F. Cuscovitch, Sr., 42 Woodbridge Avenue, East Hartford, Conn.

Filed July 13, 1970, Ser. No. 54,549
Int. Cl. B25f *1/00*; B25c *1/00*
U.S. Cl. 7—17 9 Claims



A multipurpose tool for laying carpet material on stairs and under overhanging cabinetry or other fixtures. The tool includes a drive bar which has a carpet-tucking blade connected at one end and a nail-driving head at the opposite end. The blade includes an off-set or stepped end portion having a blunt end surface which is used for folding a carpet tightly, into a groove between tacking strips in the corner between a step and a mating riser. The nail-driving head is employed for driving nails through tacking strips or other components to attach the strips or components to the floor in areas under overhangs which cannot be reached with a hammer.

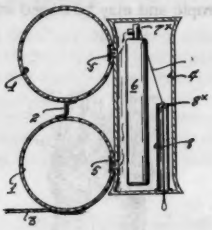
3,685,065
Patent Not Issued For This Number

3,685,066
LIFERAFT INFLATION SYSTEM

David V. Edwards, Mill Lane, Neshanic, N.J.

Filed March 10, 1971, Ser. No. 122,866
Int. Cl. B63c *9/04*; B63b *7/08*
U.S. Cl. 9—11 A 2 Claims

A system for inflating the tubular areas of an inflatable liferaft from a gas cylinder, by enclosing the cylinder and valve mechanism inside a hermetically sealed container which is connected to the liferaft tubes by non-return valve. Actuation of the cylinder is by a cable operating through an air-tight sleeve, the cable leading to the cylinder valve, and because the sleeve is flexible and can be contracted by the cable, like a bellows, the cable can be pulled and the valve operated exterior to the container. Access to the cylinder for replacement or servicing may be employed by using an airtight slide fastener closing an opening in the container, or by opening, and thereafter closing, a seam. The container preferably is dimen-



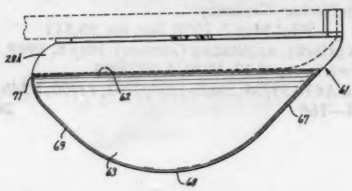
sioned and positioned so that it can be in the form of a boarding ramp or ladder-step mount.

3,685,067
Patent Not Issued For This Number

3,685,068
DEVICE FOR CREATING SPRAY FROM A WATER SKI

Jack L. Reed, Fabius Township, St. Joseph County, Mich., assignor to Riverton Industries, Inc., Three Rivers, Mich.

Filed July 30, 1970, Ser. No. 59,528
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 R 9 Claims



A device for creating a water spray and for laterally stabilizing a water ski. A water transfer channel extends longitudinally of a water ski on the underside thereof. The forward end of the channel is open to receive water passing beneath the ski. The rearward end of the channel is curved upwardly and terminates in an upstanding portion open at its upper end to allow exit of the water spray from the channel. The upstanding portion is of narrower cross-section than the forward portion of the channel to increase output water pressure. Flanges are provided on the forward portion of the channel for securing the device to the bottom of the water ski. The lateral faces of the device provide lateral stabilizing surfaces.

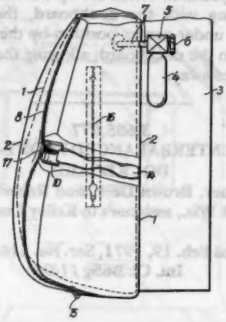
3,685,069
DEVICE FOR OPENING THE PROTECTIVE COVER OF AN INFLATABLE BODY

Jost Bernhardt, and Friedrich Bohle, both of Hamburg, Germany, assignors to Bernhardt Apparatebau GmbH & Co., Hamburg, Germany

Filed March 8, 1971, Ser. No. 122,080
Claims priority, application Germany, March 10, 1970, P 20 11 185.7
Int. Cl. B63c *9/16*
U.S. Cl. 9—316 6 Claims

A device for opening the protective cover of an inflatable body, especially life jacket, according to which the release opening of said protective cover is adapted to be closed by a slide fastener which has a relatively wide looped portion in closing position of said fastener inserted in a chamber inside said cover while an adjacent portion of said fastener passes

through a relatively narrow passage through which said loop portion is pulled out by fluid pressure acting upon the inside of said inflatable body in said cover at which time a portion of



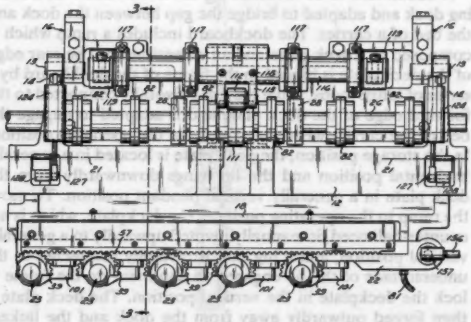
said fastener breaks open followed by successive portions of said fastener opening in conformity with the increasing inflation of said inflatable body.

3,685,070

FORGING MACHINE TRANSFER

Herbert L. McClellan; Harry A. Dom, and Robert E. Wisebaker, all of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Filed June 26, 1970, Ser. No. 50,223
Int. Cl. B21d *43/02*
U.S. Cl. 10—12 T **19 Claims**



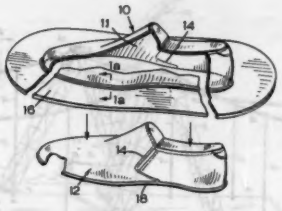
A transfer system is disclosed for progressively transferring work pieces between die stations of a progressive forging machine. The transfer includes a pivoted frame on which a reciprocating slide is supported. Work pieces gripping fingers are carried by the slide for movement from a gripping position to a release position. Pivotal movement of the frame moves the fingers out away from the die face to provide clearance for turning of the fingers. Finger turning is in response to reciprocation of the finger supporting slide. A first cam driven linkage controls the oscillating pivotal movement of the frame and a second cam driven linkage controls the gripping and release of the fingers. The two linkages are arranged to be substantially unaffected by the pivotal movement of the frame and the reciprocating movement of the slide. The transfer is arranged to permit easy removal of one slide with work piece gripping fingers thereon and the substitution of a different slide with a different type of work piece gripping fingers. Therefore, the transfer system can be easily modified to accommodate different types of work pieces and to permit different types of forming operations within a single machine.

3,685,071

METHOD OF MAKING SHOES

Peter D. J. Dicks, Kitchener, Ontario, and William M. Hill, Ayr, Ontario, both of Canada, assignors to Mel Hill Technical Developments Limited, Preston, Ontario, Canada

Filed Aug. 31, 1970, Ser. No. 68,419
Int. Cl. A43d
U.S. Cl. 12—146 C **13 Claims**



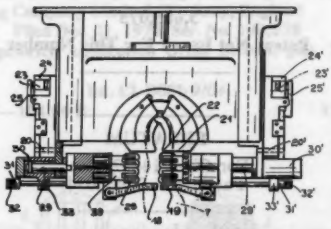
A method of forming a shoe comprising the steps of forming the upper formation from a plastic material by electrostatic deposition on a mould, removing the plastic moulded upper formation from the mould and uniting the lower marginal portion of the upper formation to a sole.

3,685,072

SHOE-LASTING MACHINE

Herbert Schindler, Pirmasens, and Gerhard Winter, Havenstein, both of Germany, assignors to Firma Schon & Cie Gesellschaft mit beschrankter Haftung, Pirmasens, Germany

Filed Nov. 23, 1970, Ser. No. 91,990
Claims priority, application Germany, Nov. 27, 1969, P 19 59 560.9
Int. Cl. A43d *21/00*
U.S. Cl. 12—12 **10 Claims**



A shoe-lasting machine for wiping in a shank over a last and insole, the machine including a pivotally mounted last-carrier, shears for tucking in a heel portion, and a plurality of wiping members for an shank area of an upper leather portion which includes a plurality of wiper elements mounted on an assembly carrier adapted for forward motion towards the last. The assembly is supported rotatably about its axis which substantially coincides with a trailing edge of the heel portion shears in their operating position. Contactor levers are provided which are preferably mounted on the wiper assembly carrier and which after sensing the last impart a rotary movement to the assembly carrier which helps to adapt an inclination of the wiper elements to a predetermined shank curvature of the last. The rotatably supported assembly carrier also carries a device for stretching the leather prior to the engagement of the wiping members for the shank area, the inclination of the leather-stretching device thus being also determined by the inclination of the assembly carrier itself.

3,685,073

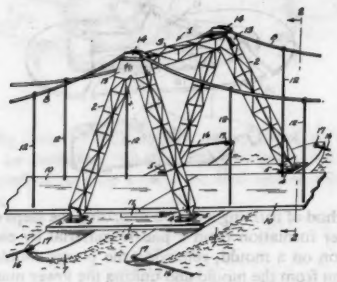
Patent Not Issued For This Number

3,685,074

SUSPENSION BRIDGE PREASSEMBLED ABUTMENT TOWERS AND ANCHORAGE

Robert G. Marshall, 8308 Lilac Lane, Alexandria, Va., and Robert K. Hedrick, 3421 Spring Dr., Alexandria, Va.

Filed Dec. 14, 1970, Ser. No. 97,647
Int. Cl. E01d *15/08*
U.S. Cl. 14—27 **5 Claims**



A preassembled abutment tower and anchorage for a combination pontoon and suspension bridge consisting of one or more spans. Each assembly comprises a tower unit of a pair of A-frames connected at their tops by a cross girder. Each A-frame is secured to the deck of a catamaran hulled vessel. Main cables supported by the apices of the A-frames are anchored to opposite shores and hangars support the roadway deck between towers. Anchorage of the catamaran's hulls are by cables connecting their prows with anchorage in the bed of the body of water. Spuds, retractable in the A-frames, may also be driven into the bed

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3,685,075

Patent Not Issued For This Number

ERRATUM

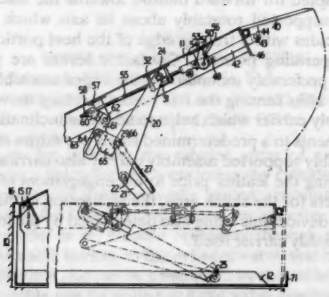
For Class 14—27 see:
Patent No. 3,685,074

3,685,076

DOCKBOARD LIP RAISING MECHANISM

Dermont F. Loblick, Gibbons, Alberta, Canada

Filed June 26, 1970, Ser. No. 50,098
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **6 Claims**



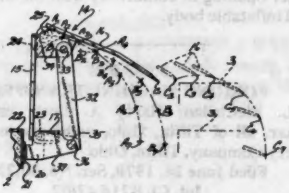
A dockboard lip raising mechanism for the hinged lip of a dockboard including a link attached at one end to the lip and attached at its other end to a crank member, the arrangement being such that the pivotal connection between the link and the crank member moves over-center as the lip nears its raised position, so that the weight of the lip holds the mechanism in the over-center-position. When the lip contacts a vehicle platform on lowering with the dockboard, the mechanism is tripped into the under-center position by the slight raising of the lip relative to the dockboard, allowing the lip to fall when the vehicle moves away.

3,685,077

NON-COUNTERBALANCED FRONT-OF-DOCK DOCKBOARD

Thomas J. Wiener, Brown Deer, and Robert C. Kuhns, Elm Grove, both of Wis., assignors to Kelley Company, Inc., Milwaukee, Wis.

Filed Feb. 19, 1971, Ser. No. 116,768
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **17 Claims**



A dockboard to be mounted on the front surface of a loading dock and adapted to bridge the gap between the dock and the bed of a carrier. The dockboard includes a ramp which is composed of a deck plate and an extension lip. The rear edge of the deck plate is hinged to the frame of the dockboard by a series of hinge loops, while the lip is pivotally connected to the forward edge of the deck plate and is adapted to engage the bed of the carrier when the ramp is in the operating position. In the storage position, the deck plate is located in a generally horizontal position and the lip hangs downwardly from the deck plate in a generally vertical pendant position. To move the ramp to the operating position, the deckplate, which is not counter-balanced, is manually pivoted upwardly to a generally vertical position, and a lug that is pivotally connected to the undersurface of the lip engages an abutment on the frame to lock the deckplate in the vertical position. The deck plate is then forced outwardly away from the dock and the linkage between the deck plate, the lip and the frame enables the outer edge of the lip to inscribe a generally curved path in which it initially moves upwardly to clear the bed of the carrier and then downwardly into engagement with the carrier bed. After loading, the carrier merely pulls away from the dock and the ramp will move by gravity to the storage position.

3,685,078

Patent Not Issued For This Number

3,685,079

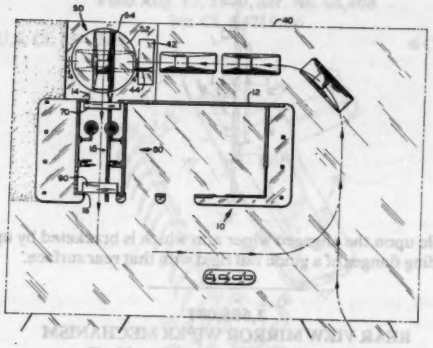
VEHICLE WASHING SYSTEM

Jack S. Dawson, Grand Rapids, Ohio, assignor to Dawson-Yager, Inc., Toledo, Ohio

Filed June 22, 1970, Ser. No. 48,074
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **9 Claims**

In the conversion of existing buildings into facilities for washing vehicles, a conveyor within the building is associated

with a turn-table at either the inlet or exit of the washing bay within the building where the vehicle turning space is insuffi-



cient to accommodate the normal turning radii of conventional vehicles.

3,685,080

MECHANICALLY POWERED TOOTHBRUSH

Otto Hubner, Gruntal 33, Munich 27, Germany

Filed Aug. 28, 1969, Ser. No. 853,679

Int. Cl. A46b *13/02*

U.S. Cl. 15—22 R **1 Claim**

An electrically powered mechanically driven toothbrush comprising an elongated preferably cylindrical thin casing formed in two parts, one for batteries, the other for the motor. The toothbrush shank is secured to the motor section while a switch physically separates the batteries from the motor and selectively connects the motor to the batteries for operation.

3,685,081

BRUSH AND RUG SCRUBBER

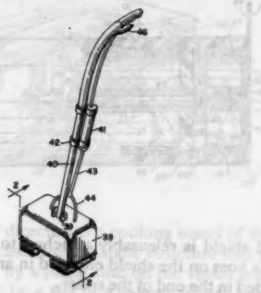
Fred A. Wesemann, Pompano Beach, Fla., assignor to Consolidated Products Incorporated, Fort Lauderdale, Fla.

Filed Jan. 29, 1971, Ser. No. 111,018

Int. Cl. A47l *11/03, 11/12*

U.S. Cl. 15—50 R **9 Claims**

This specification discloses a brush and rug scrubber comprising a mounting plate having two guide rods secured to the underside of the plate in spaced relation relative thereto and parallel to each other. A pair of brushes are slidably mounted on the guide rods with the latter being received in passages in the brushes. A compression coil spring is positioned in each passage about a guide rod and the springs urge the brushes toward one another. A motor is mounted on the upper face of the plate and has a vertical drive shaft extending through a central opening in the plate. Drivably mounted on the lower end of the shaft is an arm having rollers rotatably mounted on its ends and in engagement with the backs of the brushes. As



the shaft rotates, the brushes are moved apart against the influence of the springs and towards one another by the springs. Thus, the brushes reciprocate. Provision is also made for feeding detergent to the bristles of the brushes.

3,685,082

Patent Not Issued For This Number

3,685,083

BI-DIRECTIONAL PIPELINE PIG

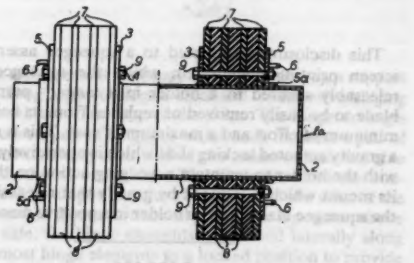
John Walter Jones, Hayes, England, assignor to General Descaling Company Limited, Worksop, England

Filed Dec. 21, 1970, Ser. No. 100,278

Claims priority, application Great Britain, Jan. 1, 1970, 27/70

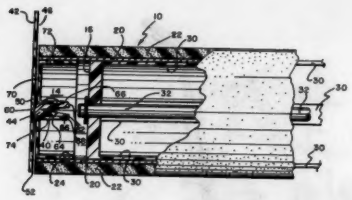
Int. Cl. B08b *9/04*

U.S. Cl. 15—104.06 R **11 Claims**



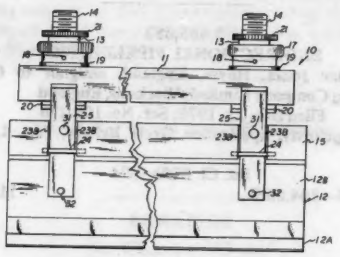
A bi-directional pig for operation in a pipeline comprising an elongated body, at least one annular sealing assembly mounted on said body, the sealing assembly comprising a plurality of alternately hard and soft sealing rings sandwiched between rigid backing members and means for applying pressure to said assembly whereby in operation, the soft sealing rings project outwardly to enter into sealing engagement with the wall of the pipe. Locking means are preferably incorporated in the bi-directional pig for automatically interlocking the same to another pig when in the pipeline and for releasing the same therefrom.

3,685,084
END SHIELD FOR PAINT ROLLER
Melvin L. Bennett, 2739 S. Martinson, Wichita, Kans.
Filed Feb. 12, 1971, Ser. No. 115,022
Int. Cl. B44d 3/28
U.S. Cl. 15—230.11 6 Claims



An end shield is releasably attached to an end of a paint roller by a boss on the shield engaged in an axial opening in a plug bonded in the end of the roller.

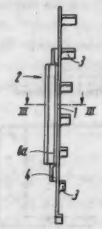
3,685,085
SQUEEGEE ASSEMBLY FOR USE IN SCREEN PRINTING MACHINES
David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machine, Inc., Hawthorne, N.J.
Filed Jan. 18, 1971, Ser. No. 106,968
Int. Cl. B41f 15/44
U.S. Cl. 15—245 14 Claims



This disclosure is directed to a squeegee assembly for a screen printing machine in which the squeegee blade is releasably secured to a holder in a manner permitting the blade to be easily removed or replaced from its holder with a minimum of effort and a maximum of ease. This is attained by a gravity actuated locking slide which is operatively associated with the holder to maintain a wedging action on the blade or its mount which is induced by gravity that releasably secures the squeegee blade onto its holder in a positive manner.

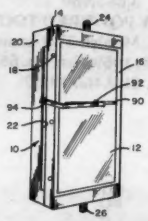
3,685,086
PRESSURE INTENSIFIER FOR WINDSHIELD WIPERS
Karl Frohlich, Bernardstrasse 9, Hausen, Germany
Filed Aug. 5, 1970, Ser. No. 61,232
Claims priority, application Germany, Sept. 30, 1969, G 69 38 113.1
Int. Cl. B60s 1/32
U.S. Cl. 15—250.2 7 Claims

A pressure-intensifying attachment for windshield wipers has a base plate, in the shape of a generally trapezoidal strip, which clamps onto a wiper arm and carries on its exposed surface a set of transverse wind-catching ribs progressively increasing in height from the narrow end to the wide end of the strip. The clamping unit comprises a bar of substantially triangular cross-section, integrally joined along one edge to the rear surface of the plate, bearing with the apex of its triangular



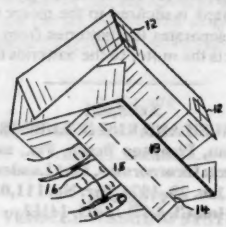
profile upon the engaged wiper arm which is bracketed by upstanding flanges of a guide rail rigid with that rear surface.

3,685,087
REAR VIEW MIRROR WIPER MECHANISM
Maurice B. Pittman, 1786 Oakwood, Memphis, Tenn.
Filed July 13, 1970, Ser. No. 54,439
Int. Cl. B60s 1/20
U.S. Cl. 15—250.24 4 Claims



A wiper mechanism for relatively large rear view mirrors of trucks, and the like, wherein a wiper blade extends substantially across the mirror and is reciprocal therealong for wiping of the reflecting surface thereof. The wiper blade is operably connected to a motor which may be selectively actuated by the driver of the vehicle for cleaning of the mirror as required.

3,685,088
MEANS FOR COLLECTING A DOG 'S EXCREMENT BY THE DOG'S OWNER OR WALKER
Henry Doherty, 19B Byrne Ct., Wayne, N.J.
Filed March 3, 1971, Ser. No. 120,602
Int. Cl. A47l 13/52; A47k 11/02
U.S. Cl. 15—257.6 5 Claims



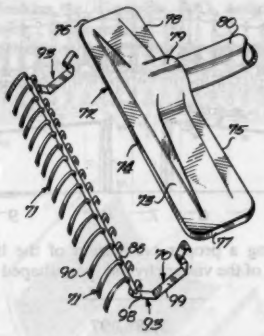
A paperboard scoop folded along indented lines from a flat form into a container to scoop up a dog's excrement by a dog-walker. The hand of the user is given sanitary protection by a flap-guard and the hand is held to the scoop in order to manipulate it by rubber hands.

3,685,089

SHAG RUG TOOL

Robert C. Lagerstrom, Anderson, S.C., assignor to National Union Electric Corporation, Stamford, Conn.

Filed Aug. 17, 1970, Ser. No. 64,408
Int. Cl. A47l 9/06
U.S. Cl. 15—369 6 Claims



A tool for cleaning and straightening the elongated pile of a shag rug which comprises an assembly of elongated resilient members mounted adjacent the air intake opening of a vacuum cleaner nozzle which have limited pivotal movement about an axis generally parallel to the longitudinal axis of the air intake opening of the vacuum cleaner nozzle with the lower end of each member being maintained in resilient engagement with the elongated pile of the shag rug to effect straightening the pile when the nozzle is moved in contact with the shag rug.

3,685,090

CASTOR ASSEMBLY

Sture Asberg, Lilla Pukevagen 5, Savedalen, Sweden, and Hendrikus Jacobus Maria Timmer, Irenelaan 39, Ede, Netherlands

Division of Ser. No. 807,545, March 17, 1969, Pat. No. 3,606,503. This application Dec. 17, 1970, Ser. No. 99,042
Claims priority, application Netherlands, Nov. 14, 1968, 6816232; Nov. 14, 1968, 6816233
Int. Cl. B60b 33/00
U.S. Cl. 16—20 3 Claims

A swivel castor assembly comprising a bracket, a castor rotatably mounted in the bracket, a plate member for securing the castor assembly to the structure, a bearing assembly between said plate member and bracket to facilitate rotational movement of said bracket relative to said plate member, said bearing assembly comprising inner and outer rings spaced apart to define an annular space between said rings having confronting circumferentially extending raceways, a plurality of rolling elements in the space between said rings, one of said rings secured to said bracket and the other of said rings secured to said plate member, means defining an access opening in said inner ring to permit assembly of the rolling elements, said access opening extending perpendicularly to a plane in which a couple is active due to load on the bearing in the area of least load relative to the load applied to the castor assembly.

3,685,091

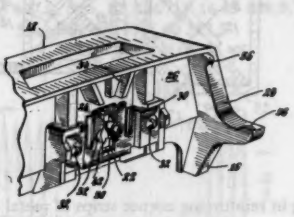
Patent Not Issued For This Number

3,685,092

COOKING VESSEL WITH DETACHABLE HANDLE

Billy G. Cook, Booneville, Ark., assignor to General Electric Company

Filed March 11, 1971, Ser. No. 123,352
Int. Cl. A47b 95/02
U.S. Cl. 16—114 7 Claims



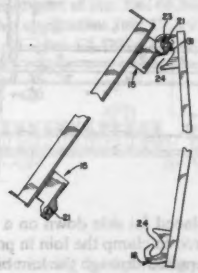
The invention is directed to a cooking vessel of the electric skillet type with a detachable handle structure that secures to the cooking vessel by a single stud on the vessel and that can be easily detached by a fail-safe release means whereby the handle structure may be conveniently removed for immersion of the cooking vessel or skillet in water for washing.

3,685,093

HINGE CONSTRUCTION

Wes E. Sanders, 1922 E. 96th St., Chicago, Ill., and John W. Allen, 2226 Evans, Flossmoor, Ill.

Filed July 18, 1969, Ser. No. 842,950
Int. Cl. E05d 15/50
U.S. Cl. 16—147 7 Claims



A hinge arrangement for supporting a member on a support structure along opposite sides thereof and for selective hinging movement about either one of the sides. The hinge arrangement includes a pair of hinges of which each includes a pair of hinge elements along each side of the member and movable laterally relative to each other. The hinge elements are constructed such that upon the elevation of one of the sides of the support member from a horizontal position to a position above the other side, the hinge elements are moved laterally along the uppermost hinge elements to a locked position to provide a hinge connection and the lowermost hinge elements are separated or unlocked to permit swinging movement about the hinge connection.

3,685,094

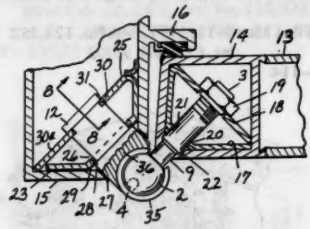
HINGE

Constantin Goossev, 629 W. 18th St., Erie, Pa., assignor to Ball Sphere Hinge Syndicate, c/o Thomas E. Doyle, Esq., Erie, Pa.

Filed March 26, 1970, Ser. No. 22,747
Int. Cl. E05d 7/12
U.S. Cl. 16—149 10 Claims

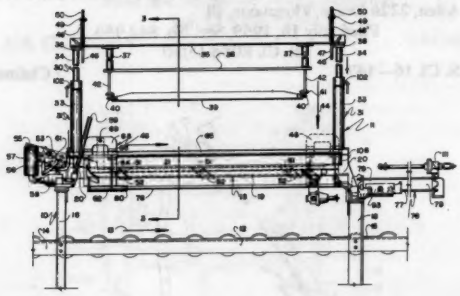
A hinge having ball and socket units, one of which is

mounted by bayonet lock means. The hinge is adapted to



mounting in reinforcing corner strips of metal doors and windows.

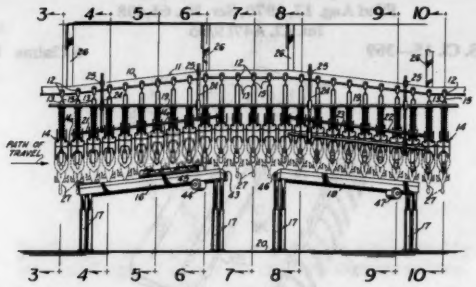
3,685,095
LOIN PULLER
Fill Metro, Winnipeg, Manitoba, Canada, assignor to Canada Packers Limited, Ontario, Canada
Filed April 16, 1970, Ser. No. 29,099
Int. Cl. A22c *17/00*
U.S. Cl. 17—1 **12 Claims**



The pork loin is placed fat side down on a bed and a hold-down device is lowered to clamp the loin in position. An arcuately curved knife is pulled through the loin between the meat and the fat thus severing the layer of back fat. At the end of the knife stroke the bed is released and swings downwardly thus dropping the loin and the fat onto a conveyor therebelow. The hold-down raises and returns the bed to the closed position whereupon the knife returns to the starting position.

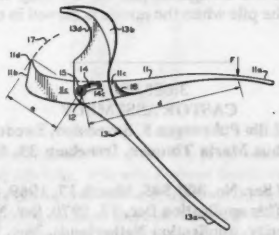
3,685,096
APPARATUS FOR EVISCERATING CHICKENS OR OTHER FOWL
Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.
Filed Dec. 8, 1969, Ser. No. 883,169
Int. Cl. A22c *21/06*
U.S. Cl. 17—11 **8 Claims**

Method and Apparatus for removing the viscera from chickens or other fowl being conveyed in a head lowermost suspended state along a predetermined path. The method includes cutting the gullet of the fowl between its crop and head, removing the viscera while leaving the crop within the fowl to display the viscera for inspection, and subsequently removing the crop by pulling on the viscera. The apparatus includes a special shackle for suspending the bird by its hocks with a sterilized spoon-shaped viscera removal tool adapted to be received in a precut hole in the abdomen of the bird. The shackle and tool are displaced vertically with respect to each other to introduce the tool into the bird and remove the viscera therefrom. Devices are provided in the path of travel



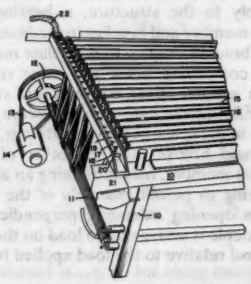
for maintaining a proper orientation of the bird to permit removal of all of the viscera by the spoonshaped tool.

3,685,097
CLAM OPENER TOOLS
Merton E. Scott; Richard W. Schmutzler, both of Walton, and Douglas R. Cleminshaw, Syracuse, all of N.Y., assignors to Scott Machine Development Corporation, Walton, N.Y.
Filed Aug. 3, 1970, Ser. No. 60,265
Int. Cl. A22c *29/00*
U.S. Cl. 17—75 **12 Claims**



A plier-like clam-opener tool having a variable pivot point to provide varying mechanical advantage as the tool is operated to slice a clam open.

3,685,098
SHRIMP SEPARATING AND PEELING MACHINE
James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.
Filed Oct. 14, 1970, Ser. No. 80,623
Int. Cl. A22c *29/00*
U.S. Cl. 17—73 **3 Claims**



In order to obtain a more positive drive of separator and peeling pairs of rollers in shrimp peeling machines, a splined

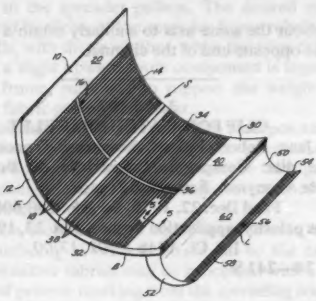
drive shaft and splined sprockets on the rollers cooperate with internally toothed belts in mesh with the drive shaft and rollers which is found to result in more complete peeling results.

3,685,099

SPARK PREVENTING CARD SCREEN

Robert Bain Jenkins, Jr., Gastonia, N.C., assignor to Jenkins Metal Shops Inc., Gastonia, N.C.

Filed Sept. 3, 1970, Ser. No. 69,382
Int. Cl. D01g 15/34
U.S. Cl. 19—95 3 Claims



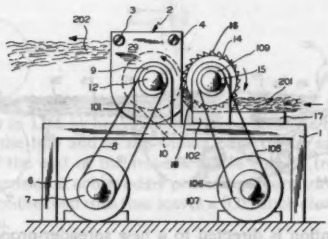
A card screen having a non-spark surface on at least a portion of the screen, manufactured either by forming the entire screen of a solid plastic material free from spark producing properties or by covering the blanks with a layer or laminate of plastic or other non-spark generating material at the point where the screen is set nearest the cylinders to prevent sparks resulting from engagement with the card screen by the cylinder teeth, which could possibly lead to fires in or beneath the carding machines.

3,685,100

CARD COVER WITH FIBER-CONVEYING CHANNELS

Roger S. Brown, New Orleans, and Philip L. Rhodes, Chalmette, both of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed June 26, 1970, Ser. No. 50,217
Int. Cl. D01g 15/12
U.S. Cl. 19—98 4 Claims



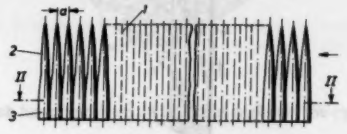
A cover for a carding cylinder, is characterized by a series of fiber conveying channels adjacent the cylinder surface. The channels collectively take the form of an interrupted screw thread and function to move fiber across and around the cylinder in a helical path.

3,685,101

NEEDLE STRIPS FOR COMBING AND LIKE MACHINES

Josef Egerer, Schwabach, Bayern, Germany, assignor to Staedtler & Uhl, Schwabach, Germany

Continuation-in-part of Ser. No. 755,656, Aug. 27, 1968, abandoned. This application Aug. 27, 1970, Ser. No. 67,421
Claims priority, application Germany, Sept. 9, 1967, P 16 85 607.8; Nov. 22, 1967, P 16 85 608.9; May 2, 1968, P 17 60 313.3
Int. Cl. D01g 5/14
U.S. Cl. 19—129 R 6 Claims



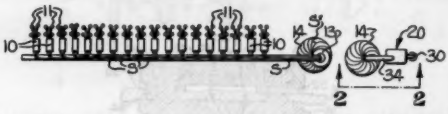
A needle strip for a combing or similar machine is formed of a row of needles the shanks of which abut each other. The cross sectional outline of the shanks is such that the points of the needles are located at the desired spacings. The needles are held in position by layers of a bonding material such as solder on both sides of the row. This bonding material fills the depressions left between adjacent needle shanks due to the configuration of the shanks but does not penetrate between the shanks themselves and forms continuous layers.

3,685,102

METHOD FOR PROCESSING SLIVER

Herman S. Johns, Johnsonville, S.C., assignor to Wellman Industries, Inc., Johnsonville, S.C.

Continuation-in-part of Ser. No. 46,866, June 17, 1970, abandoned. This application July 17, 1970, Ser. No. 55,887
Int. Cl. D01g 21/00
U.S. Cl. 19—150 2 Claims



A method of increasing the operating efficiency of a textile drafting machine such as a gilling machine wherein, instead of utilizing a large number of small, conventional size slivers from individual sliver cans, a single oversize sliver having a weight per unit length comparable to the collective weight per unit length of the many conventional size slivers and having a substantially higher tensile strength than the conventional size slivers is fed into the drafting zone of the drafting machine so that parting of the sliver is substantially eliminated. The invention also includes novel apparatus for accommodating a single large sliver can and the feeding of the single oversize sliver therefrom into the drafting machine.

3,685,103

ADHESIVELY ATTACHED SLIDE FASTENER AND TAPE ASSEMBLY

Regina Severino, 5010 Hesperia Ave., Encino, Calif.

Filed Sept. 3, 1969, Ser. No. 854,909
Int. Cl. A44b 19/34, 19/00
U.S. Cl. 24—205.16 R 2 Claims

A dual tape and slide fastener assembly for use on garments and unique in that it obviates the need for basting and pinning. The attaching faces of the fabric tapes are substantially covered with strips of adhesive media which requires no heat and which can be properly lined up, pressed by hand and set in place in a matter of minutes. The tacky surfaces of the adhe-

sive strips are covered by a suitable plastic or an equivalent backing which can be peeled off when the user desires to set

the tapes in place prior to permanently stitching them to the garment.

3,685,104

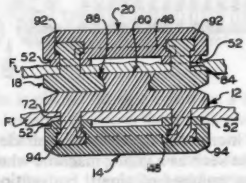
Patent Not Issued For This Number

3,685,105

MOLDED PLASTIC SNAP FASTENER AND STRIP OF COMPONENTS THEREFOR

Alfred E. Carlile, and Bernard H. Cox, both of Meadville, Pa., assignors to Tertron Inc.

Filed Oct. 22, 1969, Ser. No. 868,544
Int. Cl. A44b *17/00*
U.S. Cl. 24—213 **4 Claims**



A molded plastic snap fastener including a stud member having attaching legs for insertion in recesses in a backing member, a socket member having attaching legs for insertion in recesses in another identical backing member, and a strip of the above components for forming a plurality of the snap fasteners.

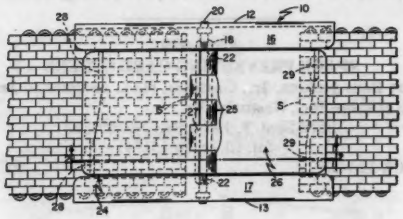
3,685,106

BUCKLE

Morris D. Gandelman, East Providence, R.I., assignor to Pale Corporation, Providence, R.I.

Filed Jan. 19, 1971, Ser. No. 107,732
Int. Cl. A44c *5/18, 5/04*
U.S. Cl. 24—265 WS **10 Claims**

A buckle for adjustably securing a strap end such as an end of mesh bracelet has a casing with side walls and a spanning wall defining a channel for receiving the strap end. A gripper plate member is hinged to the casing to pivot from an inoperative position toward the inner surface of the spanning wall to an operative position engaging the strap end near an outer end of the spanning wall and retaining the end in the channel. Latching means releasably locks the plate member in operative position. A second such gripper plate member may be



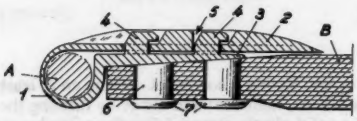
hinged about the same axis to similarly retain a second strap end in the opposite end of the channel.

3,685,107

CLIP FOR WATCH BRACELET

Eugene Jean Robert Epiard, Besancon, France, assignor to Societe dite: Compagnie Industrielle du Bracelet C.I.B. (Societe Anonyme), Besancon, France

Filed Dec. 22, 1970, Ser. No. 100,600
Claims priority, application France, Jan. 23, 1970, 7002447
Int. Cl. A44b *13/02, 17/00*
U.S. Cl. 24—241 S **4 Claims**



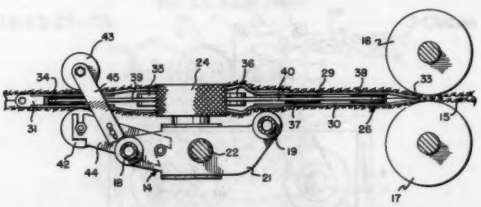
A clip for watch bracelet, formed of one piece of plastic having a trough for receiving a watch bar and two branches capable of being detachably connected while one branch can be attached to the watch band or bracelet whereby said watch can be detachably connected by the clip to one side of said watch.

3,685,108

SPREADER-PROPELLER APPARATUS FOR TUBULAR KNITTED FABRICS

Andrew P. Cecere, Valley Stream, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,312
Int. Cl. D06c *5/00*
U.S. Cl. 26—55 R **2 Claims**



The invention is directed to a new spreader-propeller arrangement for handling tubular knitted fabrics in a manner to eliminate marking of the fabric or at least to effect a significant reduction in fabric marking. The new apparatus includes a spreader frame which is received internally of a tube of knitted fabric and is arranged to distend the tube laterally to a flat, two-layered form having a predetermined width. The spreader frame includes belts and pulleys which engage the internal edge walls of the fabric and cause it to be advanced in

the desired direction. Driving of these belts and pulleys is effected through edge drive rolls located on the exterior of the fabric and acting through the fabric edge walls. A unique feature of the invention resides in the provision of an arrangement for supporting the weight of the spreader frame and fabric by means of a small upward vertical component of the driving force of the edge drive rolls, rather than by physical confinement of the spreader frame as has been conventional heretofore, thereby eliminating an important cause of fabric marking. The edge drive rolls of the new apparatus are of cylindrical configuration, as are the spreader frame pulleys with which they cooperate, and the invention provides for vertical supporting of the spreader frame by effecting a controlled misalignment of the rotational axes of the edge drive rolls relative to the spreader pulleys. The desired misalignment is effected by tilting of the spreader frame relative to the edge drive rolls, with the result that, when the edge drive rolls are operated, a slight upward force component is imparted to the spreader frame, sufficient to support the weight of the frame and the fabric passing thereover.

The spreader frame of the invention also incorporates a special combination of hard, cylindrical rolls, selected ones of which are provided with a patterned surface configuration, with the surprising and highly advantageous result of greatly minimizing fabric marking.

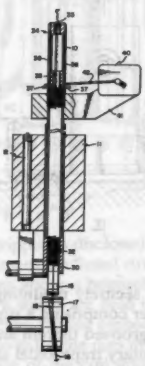
The invention includes other significant features, such as low-friction surfacing at critical points, all to the end that delicate and sensitive fabrics may be processed with a practical minimum of process marking from the spreading stage.

3,685,109

SMALL DENIER STUFFER CRIMPER AND METHOD

Eugene Torello-Viera, Claymont, Del., assignor to Joseph Bancroft & Sons Co., Wilmington, Del.

Filed June 11, 1970, Ser. No. 45,307
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **5 Claims**



A stuffer crimper for small denier yarns having feed rolls of from 1.0 to 1.26 inches in diameter and an angle between the radii to the bite and to the wiping edge of the saddle in the plane of the end of the traverse of 38° to 29°, respectively. This dimension if achieved by providing a yarn traverse across the bite of the feed rolls that leaves a 0.05-inch clearance from the edges.

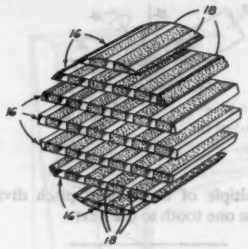
3,685,110

MANUFACTURE OF PIEZORESISTIVE BARS

George J. J. Randolph, Jr., R. R. 1, Box 391, Corvallis, Oreg.

Filed Aug. 31, 1970, Ser. No. 68,165
Int. Cl. B01j *17/00*; H04r *17/00*
U.S. Cl. 29—25.35 **5 Claims**

A method of preparing multiple bars from an elongated cylinder of piezoresistive material, which results in each bar, in its finally prepared state, being releasably joined to another



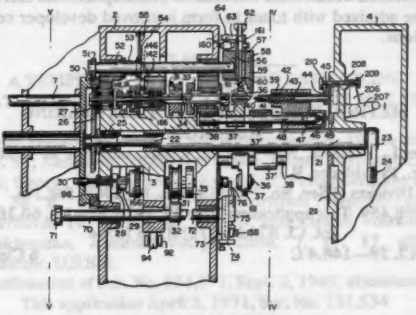
bar which has come from an adjacent region in the cylinder.

3,685,111

MULTI-SPINDLE AUTOMATIC BAR MACHINE

Kenji Nemoto, Tokyo, Japan, assignor to Seiko Seiki Kabushiki Kaisha

Filed Dec. 8, 1969, Ser. No. 883,047
Claims priority, application Japan, Dec. 18, 1968, 43/92540
Int. Cl. B23b *11/00*
U.S. Cl. 29—27 **3 Claims**



A multiple-spindle bar machine has a rotatable and indexable drum with tool carriers and drives at each position. The bar machine is particularly suitable for the high precision production of long parts of small diameter in that it is fitted with a moving support which fits around the workpiece and is maintained at a constant distance from the corresponding bit thereby minimizing deflection of the workpiece, and because it is also fitted with locating pins and stops in both radial and circumferential directions. The bar machine also provides for cutting of gears with high precision.

3,685,112

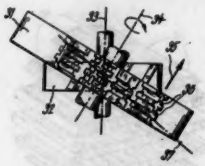
GEARLIKE TOOL WITH HELICALLY ARRANGED GROOVES

Josef Lohrer, Munich, Germany, assignor to Hurth Carl Maschinen-und Zahnradfabrik, Munich, Germany

Filed Feb. 18, 1971, Ser. No. 116,316
Claims priority, application Germany, April 24, 1970, P 20 19 873.6
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 C **6 Claims**

A gearlike tool adapted for working a gear by rolling. The tooth surfaces of said tool are provided with grooves for forming cutting edges. Said grooves are offset axially along a section of a helix, which section when axially measured comprises a groove pitch or multiple thereof plus or minus a selected amount and is equal to the amount of groove offset from one tooth to the next of the workpiece multiplied by the number of

such teeth. Further, said length is of a value other than that of the selected amount and the entire number of teeth of the tool



is an integral multiple of the groove pitch divided by the groove offsets from one tooth to the next.

3,685,113
DEVELOPER SYSTEM

Robert Joseph Hagenbach, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

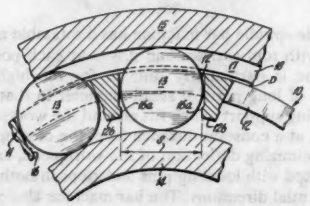
Filed March 23, 1970, Ser. No. 22,086
Int. Cl. B21h *1/14;* **B21f** *3/24;* **B24b** *1/00*
U.S. Cl. 29—148.4 B **9 Claims**

Method is provided for forming carrier particles of substantially uniform size by cutting rods of a malleable metal or plastic into lengths substantially equal to the diameter of said rods and causing continuous impingement of said rods with a rigid surface whereby essentially spheroidal carrier particles are obtained within close tolerances. These spheroidal carriers can be admixed with toner to form improved developer compositions.

3,685,114
METHOD FOR MAKING A ROLLER BEARING RETAINER

James L. Vannest, New Britain, Conn., assignor to Textron Inc., Providence, R.I.

Division of Ser. No. 798,618, Feb. 12, 1969, Pat. No. 3,598,459. This application June 29, 1970, Ser. No. 60,185
Int. Cl. B21d *53/12;* **B23p** *13/04*
U.S. Cl. 29—148.4 C **6 Claims**



The invention contemplates making a bearing-roller retainer ring from a solid annular body having a pair of radially projecting ribs that are axially spaced apart and are located inwardly from the axial ends of the body. Like spaced rectangular openings are formed radially through the body and the ribs, with a circumferential width less than the roller diameter. The width is then enlarged through the opening, from the radial side opposed to the ribs and to a radial extent short of the projecting radial limits of the ribs and to a width extent sufficient to accommodate the roller diameter. The pockets are sufficiently close to permit transient non-permanent resilient deflection of the ribs as rollers are inserted in the course of assembly to a race ring.

The retainer ring is preferably formed from a ribbed annulus by making radial openings through the annulus and ribs and by enlarging the width of the openings to a depth less than the projecting limits of the ribs. The ribs are thus formed into lugs with lips projecting from their end portions.

3,685,115
METHOD FOR MAKING DENTAL COPING

Warren J. Scott, 130 Hesper Ave., Metairie, La.

Filed May 25, 1970, Ser. No. 40,418
Int. Cl. B21f *43/00;* **B23p** *13/00*
U.S. Cl. 29—160.6 **10 Claims**

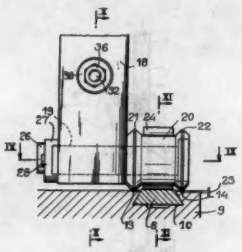
A method for making precision fixed crown and/or bridgework utilizing a non-gold base metal. More specifically, a method for casting a fixed crown and/or fixed bridgework from chrome cobalt and chrome nickel alloy metals heretofore employed only in the construction of bridgework not involving dental crowns or copings (i.e., removable bridgework).

The present method basically involves preparing and heating to certain specific temperatures the crown or coping mold, then heating the alloy base metal and centrifugally casting the alloy into the mold whereby such hitherto unsuitable and less expensive alloys can now be employed to cast fixed crowns and/or bridgework.

3,685,116
METHOD AND APPARATUS OF MOUNTING AND SECURING A RECTILINEAR ELEMENT ON A SUPPORT MEMBER OF A MACHINE

Marcel L. Neuman, 19 rue Chabannes, Collonges-Au-Mont D'OR, and Louis F. Colomb, 22 rue Edouard Idoux, Givors, both of France

Division of Ser. No. 715,841, March 25, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,187
Claims priority, application France, March 30, 1967, 67100801; June 27, 1967, 67112020; Jan. 28, 1968, 68137577
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **7 Claims**



An apparatus for securely mounting a rectilinear element on a support member comprising a support member having a trapezoidal section grooved therein and a rectilinear element having a complementary trapezoidal shaped portion received in the groove, the two trapezoidal shapes being such that when the rectilinear element is inserted in the groove a slight play will exist between the complementary inclined sides of the grooved element and a high pressure is exerted on the inclined edges of the groove to bed the rectilinear element in the groove.

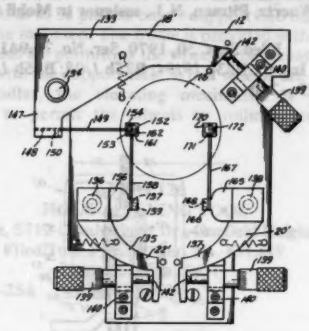
3,685,117
ALIGNMENT FIXTURE

Henry Wing, and Ray Cooper, both of Philadelphia, Pa., assignors to Jade Corporation, Beth Ayres, Pa.

Filed May 12, 1970, Ser. No. 36,542
Int. Cl. G03b *27/02*
U.S. Cl. 29—203 P **11 Claims**

An alignment fixture comprising a wafer carrying member

which is moveable relative to a base and which is interconnected thereto by means of three pivotably mounted levers which are moved about their pivots by micrometers.

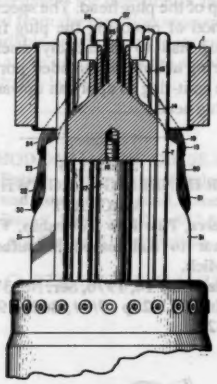


3,685,118

WIRE COIL STRIPPER AND INSERTING DEVICE

Stanley D. Payne; Donald E. Hill, both of Fort Wayne, Ind., and Robert G. Walker, Brighton, Mich., assignors to Industra Products, Inc., Fort Wayne, Ind.

Filed April 13, 1970, Ser. No. 27,868
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 R **9 Claims**



An improved wire stripper is disclosed in several embodiments. The first embodiment is a fluted stripper having a series of vertical pins extending above a hemispherical surface. The wires to be inserted in a stator are held in proper alignment between adjacent pins. The second embodiment substitutes a series of ridges and grooves for the pins to maintain coil alignment during the insertion of the coil into the stator. A third embodiment is a hybrid of the first and second embodiment using the pins in conjunction with a series of ridges and grooves and may additionally be provided with a modified blade alignment tool which serves to distribute the forces somewhat uniformly between the several pins.

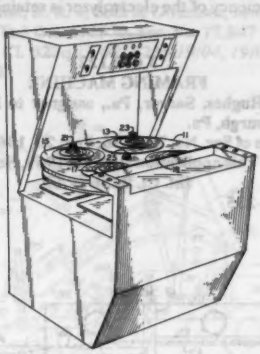
3,685,119

AUTOMATIC TOOLING FOR IN-SLOT WINDER

Eugene E. Geber, Box 78, Ossian, Ind., assignor to Industra Products, Inc., Fort Wayne, Ind.

Filed Sept. 30, 1970, Ser. No. 76,862
Int. Cl. H02k *15/06*
U.S. Cl. 29—205 D **18 Claims**

An improved multistation automatic bulb inserting in-slot coil winding machine is disclosed having four stator supporting positions each of which is adapted to releasably hold the appropriate number of tooling bulbs in conjunction with a stator. Two stations insert and remove these tooling bulbs and actuate the mechanism within the turn table for securing the bulbs while the other two stations having unique tooling bulb supports which have winding needles for performing the in-slot winding operation.



3,685,120

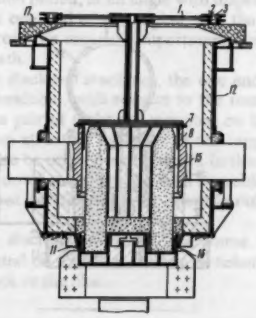
Patent Not Issued For This Number

3,685,121

A TEMPLET AND METHOD FOR ASSEMBLING CATHODE CAPS ON ELECTROLYZERS FOR MOLTEN SALTS

Evgeny Ivanovich Adaev, 2 Schukinsky proezd, 10 korpus 1, kv. 56; Alexander Vasilievich Blinov, ulitsa Gorkogo, 41, kv. 48; Georgy Mikirtychevich Kamarian, Vorontsovskaya ulitsa, 30 "b," kv. 18; Viktor Alexandrovich Novoselov, ulitsa Vavilovas 10, korpus 20, kv. 28, and Leonid Markovich Yakimenko, Abelmanovskaya ulitsa, 7, kv. 17, all of Moscow, U.S.S.R.

Continuation of Ser. No. 854,571, Sept. 2, 1969, abandoned.
This application April 5, 1971, Ser. No. 131,534
Int. Cl. C22d *1/02*
U.S. Cl. 29—203 J **13 Claims**



A templet or assembly jig for use in the maintenance and assembly of an electrolyzer for molten salts when separating chlorine and sodium, for example, in which the templet or assembly jig orients reference pins at an upper exposed portion of an electrolyzer tank in relation to the cathode which will normally be immersed beneath a bath of molten salts, and the same templet is used during the assembly of a replaceable cathode cap and diaphragm so that orientation and assembly of the cap is effected with respect to the previously located reference pins whereby during operation of the electrolyzer

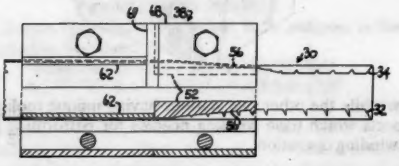
replacement of the cathode cap and diaphragms is accomplished while the electrolyzer bath or tank is immersed beneath the salts so that installation of the cathode cap is accomplished with minimum shut-down time and optimum designed efficiency of the electrolyzer is retained.

3,685,122

FRAMING MACHINE

Thomas H. Hughes, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 706,896, Feb. 20, 1968, Pat. No. 3,540,118. This application Dec. 11, 1969, Ser. No. 884,210
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 5 Claims



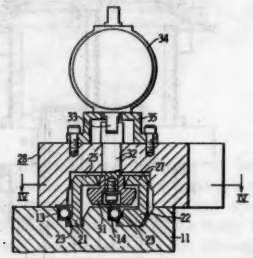
A method and apparatus for placing a channel member in clamping relation about curved, peripheral edge portions of a multiple glazed unit. A channel member having both flanges notched at essentially evenly spaced intervals is inserted into a flange spreading tool, a portion of the spreading tool and the channel is superimposed over a curved peripheral edge portion of a multiple glazed unit and the channel member is released from the tool into clamping engagement with the curved edge portion of the unit.

3,685,123

MEANS FOR RETAINING AND HANDLING REACTOR O-RING SEALS

Erling Frisch, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1970, Ser. No. 53,199
Int. Cl. B23p *19/04*; B21d *39/00*
U.S. Cl. 29—239 10 Claims



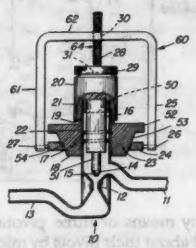
Metal O-rings are normally utilized on pressurized water reactors to obtain hermetic sealing between the pressure vessel and the closure head. The O-rings must be replaced by new rings every time the reactor vessel is opened. This is a difficult task because of the flexibility of the O-rings, which may be 15 feet in diameter, and because replacement of the rings, when located on the vessel flange, must be made under approximately 20 feet of water. The task is simplified by providing a rigid retaining ring for each O-ring and a replacement fixture for handling two O-rings and their retaining rings.

3,685,124

INSERTION AND REMOVAL OF PLUGS AND THE LIKE

John H. Wuertz, Pitman, N.J., assignor to Mobil Oil Corporation

Filed Sept. 30, 1970, Ser. No. 76,941
Int. Cl. B23p *19/04*; B25h *1/08*; B25b *1/20*
U.S. Cl. 29—240 5 Claims



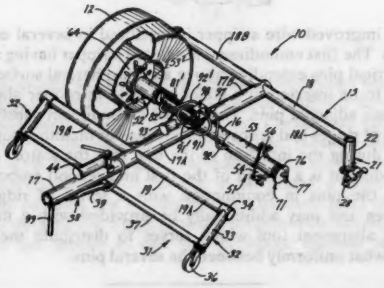
The specific disclosure provides a device for inserting a plug into an externally threaded barrel, wherein the plug is adapted to frictionally engage the interior of the barrel and has an interiorly threaded head for threadedly engaging the barrel. The device includes a split-ring having a threaded bore for threadedly engaging the barrel, a U-shaped member having a ring pivotly mounted between the opened ends of the member for seating the first ring, and a thumbscrew threadedly engaging the cross-bar portion of the U-shaped member for applying a force to the top of the plug head. The specific disclosure also provides a method of removing the plug from the barrel by rotating the plug had to threadedly disengage the barrel, fitting the split-ring about the threaded portion of the barrel, and rotating the split-ring to apply an upward force to the underside of the plug head.

3,685,125

DOLLY FOR HANDLING LARGE WHEELS AS FOR AIRCRAFT

Robert J. DePierre, Paw Paw Township, Van Buren County, Mich., assignor to Kalamazoo Manufacturing Company, Kalamazoo, Mich.

Filed May 14, 1970, Ser. No. 37,284
Int. Cl. B23p *19/04*; B60b *29/00*
U.S. Cl. 29—252 18 Claims



A wheel handler apparatus for transporting and handling large diameter and/or heavy wheels, particularly wheels for aircraft. The apparatus includes a frame supported on a plurality of rollers and having coupling means for permitting same to be suitably connected to a towing vehicle. The frame includes a main support axle adapted to have the large and/or heavy wheels removably supported on the opposite ends thereof. A wheel transfer structure is mounted on the axle and includes engaging device adapted to coact with the web plate

of the wheel for permitting the wheel to be axially drawn onto and supported on the main axle or moved axially outwardly off of the axle so as to be piloted onto a support hub on which the wheel is to be mounted. The frame is provided with an elevating mechanism for permitting the wheel to be elevated so as to be aligned with the support hub. When wheels are supported by the handler, the elevating mechanism is preferably retractable to permit the wheels to rollingly engage the ground.

3,685,126

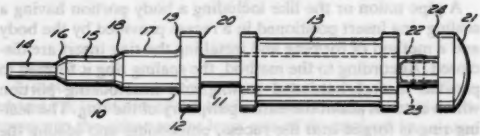
HOLE-ALIGNING TOOL

John J. Kane, 5712 Cumberland Dr., Garfield Heights, Ohio

Filed June 9, 1969, Ser. No. 831,419

Int. Cl. B23p *19/04*

U.S. Cl. 29—254 **4 Claims**



A tool for aligning holes in overlapping structural members having a stepping segment for insertion in the holes, a shank extending rearward from the insertion segment, and a massive impact member slidable on the shank to strike an impact blow against a shoulder at the inner end of the shank to drive the insertion segment into the holes.

3,685,127

METHOD OF MAKING OIL SEALS

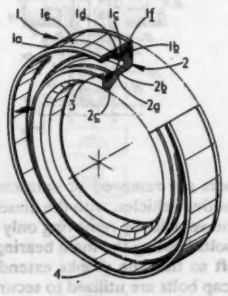
Charles William Potter, Manchester, England, assignor to Charles Weston and Company Limited, Lancashire, England

Filed Dec. 9, 1969, Ser. No. 883,656

Claims priority, application Great Britain, Dec. 10, 1968, 58,517/68

Int. Cl. B23p *17/00*; F16j *15/32*

U.S. Cl. 29—400 **3 Claims**



A fluid seal having an annular metal case supporting a flexible sealing ring with a peripheral sealing edge radially to one side of an axial web of the case. The other side of the web may be formed with a groove filled with the resilient material of the sealing ring. A radial web of the case is also provided at one edge of the axial web. The metal case is made by a roll forming process.

3,685,128

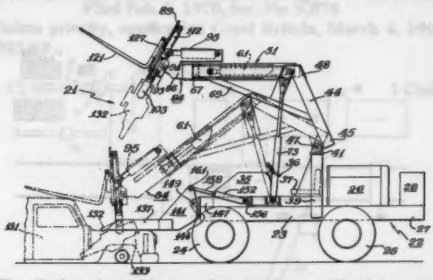
MACHINE AND METHOD FOR REMOVING ENGINES FROM VEHICLES

Allen B. Sharp, 1511 N. Jefferson St., P.O. Box 592, and Richard A. Hull, R. R. 4, both of Ottumwa, Iowa

Filed Oct. 5, 1970, Ser. No. 77,847

Int. Cl. B23q *17/00*; B23p *19/04*, *19/02*

U.S. Cl. 29—403 **25 Claims**



The disclosed machines and method are utilized to expeditiously remove the engines, and the transmissions connected thereto, from junked vehicles, such as automobiles, trucks, and the like and are particularly adapted to remove engines-transmissions that are mounted in engine compartments, in which one end of the engines-transmissions extends beyond one end of the engine compartments.

The machines include a pair of hydraulically actuated tongs which are adapted to grip the sides of the engine to be removed while the engine is mounted in the engine compartment of the vehicle. The tongs are constructed so as to permit limited, relative pivotal movement between the engine and tongs. The tongs are pivotally mounted on one end of a vertically movable boom structure which, in turn, is mounted on a portable frame adapted to be positioned adjacent to the engine compartment of the vehicle while the engine is being pulled from the engine compartment. The machines also include hold-down members which are used to restrain vertical movement of the vehicle while the engine is being removed and control means for permitting one person to control the entire operation of the machines.

During the operation of the improved machines in accordance with the improved method, the engine to be removed is gripped by the tongs and is moved vertically so that the other end of the engine is pulled from its engine mounts. The engine is then pulled, at an angle with respect to the vertical, so that the one end of the engine, and the transmission, are removed from the engine compartment along a substantially straight path.

In one of the disclosed machines, the one end of the boom structure is extendable, with respect to the rest of the boom structure, and a pair of forks are mounted on the extendible end of the boom structure adjacent to the tongs so that the machine may also be utilized as a fork lift. In this machine, the tongs and hold-down members are both movable to positions where they do not interfere with the operation of the machine as a fork lift.

In the other disclosed machine, the frame may be permanently mounted on a chassis or may be selectively carried by a fork lift truck or the like.

3,685,129

METHOD OF FABRICATING WOODEN BUILDING WALL FRAMES

John Calvin Jureit, Coral Gables; Oscar Csakvary, and Adolfo Castillo, both of Miami, all of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

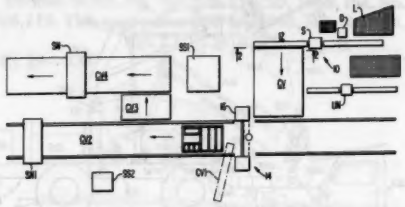
Filed April 3, 1970, Ser. No. 25,536

Int. Cl. B239 *17/00*; B27m *3/00*

U.S. Cl. 29—407 **17 Claims**

The apparatus includes a numerically controlled automatic measuring, sawing and marking device for cutting lumber to

predetermined lengths, such parts comprising the non-standard length parts of a wall frame, and marking the lumber parts forming the top and bottom plates of the wall frame to indicate the locations along such plates of the frame parts extending between the plates. The machine readable numerical information representing the non-standard lumber lengths is converted into visible instructions for establishing the position of a lumber stop relative to a saw for making lumber cuts of predetermined lengths. Machine readable numerical information representing the locations along the top and bottom plates of frame parts extending between the plates in terms of distances along the top and bottom plates from like ends thereof is converted into visible instructions for establishing the position of the lumber stop relative to a marking device and for controlling actuation of the marking device. The non-standard parts are assembled with the standard parts to form a wall frame in accordance with the markings on the plates establishing the locations of the parts extending between the plates. The markings are also coded to indicate the location of windows, doors, and tee and corner constructions along the plates.

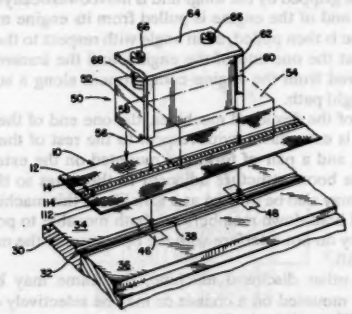


3,685,130

METHOD AND APPARATUS FOR GAPPING AND CLEANING SLIDE FASTENER CHAIN

Randall H. Doerter, Loris, S.C., assignor to Textron Inc.

Filed Feb. 12, 1971, Ser. No. 114,872
Int. Cl. B23p *19/02*
U.S. Cl. 29—408 **14 Claims**



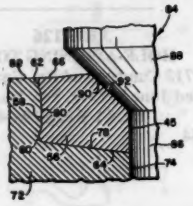
Method and apparatus for gapping and cleaning coil-filament slide fastener chain by moving an end punch having a generally trapezoidal cross-section into engagement with the coupling elements of the filamentary stringers with the stringers supported over a slotted die member. The punch transversely cuts the stringers, forces a lower leg of the coupling elements against the edges of the slot so as to longitudinally sever the same, and then seizes the severed coupling elements between the oblique side walls of the punch and the side walls of the slot to withdraw the coupling elements from the carrier tapes to form a fragment free gap end.

3,685,131

METHOD OF INSTALLING INSERT RING IN PIPE UNIONS

Frank J. Fink, Chardon, Ohio, assignor to The Imperial Manufacturing and Engineering Company, Middlefield, Ohio

Filed May 11, 1970, Ser. No. 36,278
Int. Cl. B23p *17/00*
U.S. Cl. 29—417 **4 Claims**



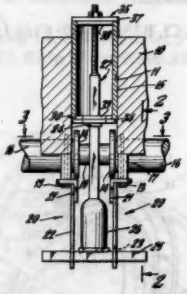
A pipe union or the like including a body portion having a sealing ring insert positioned in a recess provided by the body and a method of forming and installing the ring insert are disclosed. According to the method, the sealing ring is formed to provide a work-hardened sealing and interlocking portion which extends about the entire periphery of the ring. The sealing ring is forged into the recess, embedding and sealing the interlocking portion in the side wall of the recess and intimately contacting the adjacent ring and recess walls to provide a fluid-tight seal and mechanically interlock the ring within the recess.

3,685,132

METHOD AND APPARATUS FOR REMOVING CYLINDER LINERS OF AUTOMOTIVE VEHICLE DIESEL ENGINES

James G. Hodge, 523 Bedford Rd., North Tarrytown, N.Y.

Filed July 13, 1970, Ser. No. 54,149
Int. Cl. B23p *19/04*; B25d *17/28*; B23q *3/18*
U.S. Cl. 29—427 **10 Claims**

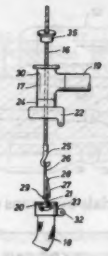


Cylinder liners are removed or extracted from diesel engines of automotive vehicles, with the diesel engine remaining mounted on the vehicle, by removing only the pistons, piston rods and the bolts holding the main bearing caps and rotating the crank shaft so that the cranks extend horizontally. The main bearing cap bolts are utilized to secure, to the undersurfaces of the main bearing caps in depending relation therefrom, a pair of substantially identical angle brackets having aligned apertures at their lower ends. A cross bar is inserted through these apertures, and a pressing tool is placed in the lower end of the cylinder liner and secured by a threaded bolt and nut to a centering device seated in the upper end of the liner. An ordinary shop jack is then positioned on the cross bar in engagement with the pressing tool, and is extended to push the cylinder liner upwardly out of the cylinder.

3,685,133
METHOD OF CONNECTING A HOSE BETWEEN STATIONS

Theodore A. Simon, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 795,489, Jan. 31, 1969, Pat. No. 3,566,500. This application Nov. 4, 1970, Ser. No. 86,954
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 5 Claims



A method of connecting a hose between a pair of stations wherein at least one of the stations is erratically movable with respect to the other and at least one of the stations has a pipe terminating in a pipe tee coupled thereto and the other of the stations is connected to the hose. A drawline is extended through the run of the pipe tee. One end of the drawline is connected to the free end of the hose and the drawline is pulled through the run of the pipe tee. The hose is connected to the adjacent end in a fluid-tight relationship and the drawline is disconnected from the hose. Finally, the drawline is removed from the pipe tee and the other end of the run of the pipe tee is closed whereby the pipe tee establishes fluid communication between the hose and the pipe.

3,685,134
METHOD OF MAKING ELECTRICAL CONTACT MATERIALS

Philip L. Blue, Centerville, Ohio, assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

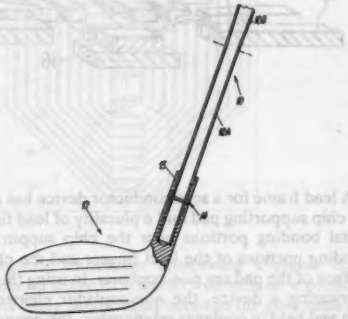
Division of Ser. No. 741,606, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 627,962, April 3, 1967, abandoned. This application May 15, 1970, Ser. No. 48,650The portion of the term of this patent subsequent to April 28, 1987, has been disclaimed.
Int. Cl. B22f *3/24*
U.S. Cl. 29—420.5 11 Claims

An electrical contact material consisting of a thin cold rolled material constructed of a high electrically and thermally conductive material and a refractory wherein particles of the refractory are dispersed within a matrix of the high electrically and thermally conductive material and also are layered in a predetermined direction.

3,685,135
METHOD OF FITTING A GOLF CLUB SHAFT TO A HEAD

Hope Lowrie Letters, East Lothian, Scotland, assignor to Ben Sayers Limited, East Lothian, Scotland

Filed Feb. 9, 1970, Ser. No. 9,876
Claims priority, application Great Britain, March 4, 1969, 11,385/69
Int. Cl. B23p *19/00*
U.S. Cl. 29—428 1 Claim



A golf club shaft has a head end consisting of a cylinder of substantially constant wall thickness. This end of the shaft is to be connected to the socket of a conventional golf club head and in order to match the shaft with a selected golf club head a portion of the cylinder is severed. The shaft is thus matched in length and flexibility characteristics to the selected golf club head. A matched set of shafts may be provided by selecting a plurality of initially identical shafts and severing selected amounts from the shafts.

3,685,136
METHOD OF MAKING A PRESSURE BONDED COMPOSITE MEMBER

Donald R. Zaremski, Cheswick; Jack M. Belgay, Freeport, and William D. Heavner, Jr., Lower Burrell, all of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 706,495, Feb. 19, 1968, abandoned. This application April 29, 1969, Ser. No. 830,179
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 13 Claims

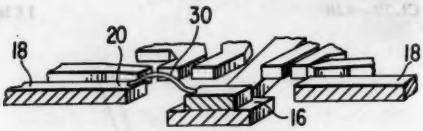
The application describes a composite article suitable for fabrication into an automotive trim member and a process for making it. The composite article comprises stainless steel bonded to a non-ferrous metal that is electrochemically anodic to carbon steel. Formation of the bond which is preferably mechanical is dependent upon heat and pressure. The bond is preferably produced by using non-ferrous metal in wire form and without any mechanical or chemical cleaning of the stainless steel and non-ferrous metal for removal of surface oxides.

3,685,137

METHOD FOR MANUFACTURING WIRE BONDED INTEGRATED CIRCUIT DEVICES

Arthur Noel Gardiner, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 13, 1971, Ser. No. 142,901
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 3 Claims



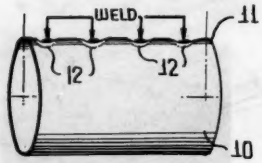
A lead frame for a semiconductor device has a semiconductor chip supporting pad and a plurality of lead fingers with terminal bonding portions near the chip supporting pad. The bonding portions of the lead fingers and the chip supporting surface of the pad are non-coplanar. In using this lead frame in fabricating a device, the non-coplanar elements are forced into and held in coplanar relationship, the connector wires are bonded between the lead fingers and the chip, and the frame is then released to permit it to return to its non-coplanar configuration. The connector wires are thus lifted to a greater angle with respect to the semiconductor chip surface and short circuits at the edge of the chip tend to be eliminated.

3,685,138

METHOD OF AND APPARATUS FOR REMOVING IRREGULARITIES IN WELDED SEAMS

Robert J. Vanderveide, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,869
Int. Cl. B23k 31/02
U.S. Cl. 29—477 6 Claims



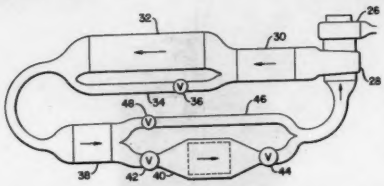
This disclosure relates to the removal or irregularities, such as ripples, in welded seams. An expandable mandrel is provided for insertion within a cylindrical member having a welded seam and the mandrel is expanded so as to circumferentially tension the metal of the container body sufficiently to remove the irregularities and to effect permanent deformation of the container body. In the removal of the irregularities, the container body is sufficiently permanently expanded so as to effect a sizing of the container body.

3,685,139

METHOD OF BRAZING

James R. Early, Hawthorne; William M. Eyring, Redondo Beach; Donald W. McGrath, Torrance, and Toshio Takenaka, Los Angeles, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed March 10, 1969, Ser. No. 805,562
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 25—498 11 Claims



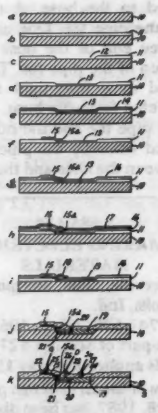
The brazing of materials by means of a flow of heated gas.

3,685,140

SHORT CHANNEL FIELD-EFFECT TRANSISTORS

William E. Engeler, Scotia, N.Y., assignor to General Electric Company

Filed Oct. 3, 1969, Ser. No. 863,654
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 12 Claims



An improved field-effect transistor having an exceedingly short channel length is described wherein a single edge defines the boundaries of both the source and drain regions. In one embodiment a gate electrode is formed over a thin oxide layer deposited on a semiconductor wafer of a first-conductivity type. An opposite-conductivity type impurity is diffused into the wafer adjacent the gate electrode. A first-conductivity-type impurity is diffused within the opposite-conductivity-type region forming a field-effect transistor having one edge of the gate electrode defining the boundary between the source and channel and the drain and channel regions. In another embodiment an edge of an insulating layer defines the boundaries of the source and drain regions. A method for fabricating isolated resistance elements is also disclosed.

3,685,141

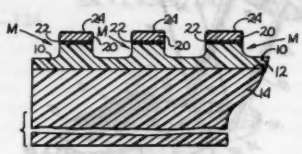
MICROALLOY EPITAXIAL VARACTOR

Jiri Sandera, Manhattan Beach, Calif., assignor to TRW Inc., Lawndale, Calif.

Filed April 5, 1971, Ser. No. 131,065
Int. Cl. B01j 17/00
U.S. Cl. 29—576 16 Claims

A high Q microalloy varactor having an abrupt PN junction and a Q in the order of 50–100 at 1 GHZ, and the following

method for constructing the same. A shallow N type conductivity epitaxial region is deposited atop a low resistivity N + type conductivity parent wafer. A plurality of aluminum dots is provided over the N type conductivity region, and the structure is sintered at 700°C in an inert atmosphere to form, under each aluminum dot, a multiplicity of microscopic masses of P



conductivity type. Thereafter, a portion of the epitaxial region is etched away to define a mesa structure. In a subsequent heating step a highly uniform P growth region is formed beneath each aluminum dot by the process of alloy regrowth, thereby forming an abrupt PN junction. Additional etching, heating, passivation, annealing, and dicing steps are all carried out.

3,685,142

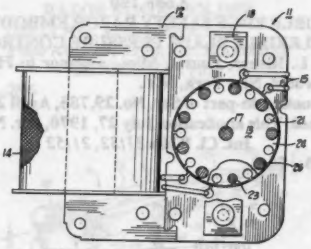
HIGH RESISTANCE ROTOR, MOTOR AND METHOD

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc.

Filed June 3, 1970, Ser. No. 43,038

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **7 Claims**



A high resistance rotor, high slip induction motor is disclosed wherein the high resistance is achieved by omitting alternate ones of the conductor bars in the squirrel cage and leaving the remaining apertures open. Normal high conductivity metal such as aluminum or copper is used for the conductor bars and by omitting alternate bars there is a saving of metal and an increase of resistance plus an increased cooling capacity in the periphery of the rotor to achieve a design class C or D motor. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,685,143

Patent Not Issued For This Number

3,685,144

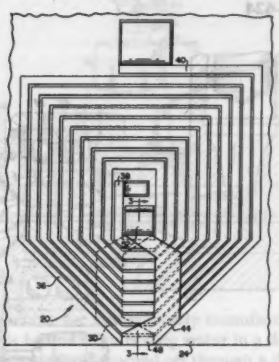
METHOD OF MAKING A MAGNETIC TRANSDUCER

Cebern B. Trimble, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 668,528, Sept. 18, 1967, Pat. No. 3,549,825. This application Aug. 14, 1970, Ser. No. 63,902

Int. Cl. G11b *5/42*; H01f *7/06*

U.S. Cl. 29—603 **9 Claims**



A planar magnetic transducer comprising a planar coil means, in the general shape of a spiral, with at least a portion of the coil means being sandwiched between the pole ends of two magnetic circuit plates. The method utilizes printed circuit techniques to batch-fabricate single end bifilar coil transducers which may be miniature in size.

3,685,145

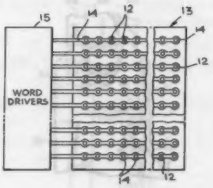
METHOD OF MAKING A BATCH FABRICATED MAGNETIC WIRE MEMORY

Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 8, 1969, Ser. No. 864,789

Int. Cl. H01f *7/06*

U.S. Cl. 29—604 **8 Claims**



A magnetic wire memory construction and method of making in which the memory comprises a plurality of stacked memory planes having memory wires inserted in aligned holes thereof. Each memory plane is fabricated using precision batch fabricated selective chemical etching techniques on a single self-supporting metal sheet so as to form pairs of insulated drive lines within the sheet looping around respective rows of a row-column matrix of memory wire receiving holes. Additional metal and magnetic layers may be provided over the surfaces of the sheets for increasing shielding and reducing memory cell disturbances.

3,685,146

Patent Not Issued For This Number

3,685,147

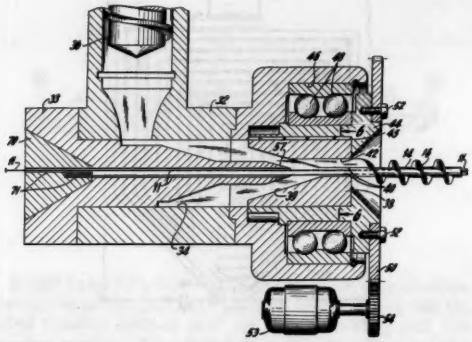
METHOD OF MAKING COAXIAL CABLE

John J. Nevin, Orange, Conn., and Leo G. Dumire, Stony Point, N.Y., assignors to Phelps Dodge Copper Products Corporation, New York, N.Y.

Continuation of Ser. No. 790,662, Jan. 13, 1969, abandoned, which is a division of Ser. No. 653,947, July 17, 1967, Pat. No. 3,461,499. This application May 27, 1970, Ser. No. 40,867

Int. Cl. H01b *13/00*; H05k *3/00*

U.S. Cl. 29—624 2 Claims



An air dielectric coaxial cable includes a thin cylindrical center conductor supported by a concentric plastic insulating layer having a plastic helical web thereabout. In fabricating the cable, a tubular center conductor is formed from a thin metallic foil or tape and is passed continuously from the tube former through a stationary annular confining zone into a rotary die where the requisite insulating layer and web are extruded around this conductor.

3,685,148

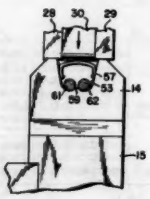
METHOD FOR MAKING A WIRE SPLICE

Jack Garfinkel, 28-33 209th Place, Bayside, N.Y.

Filed March 20, 1970, Ser. No. 21,363

Int. Cl. H01r *43/04*

U.S. Cl. 29—628 4 Claims



U-shaped staples of brass strip are crimped about two insulated magnet wires in a die by a ram. The die has a bottom wall and two side walls, and is otherwise open. The bottom wall has a ridge spacedly intermediate the side walls and two concavely arcuate face portions whose axes of curvature are parallel to the ridge, and which connect the same to the side walls. The front face of the ram is convex and cylindrically arcuate about an axis perpendicular to the afore-mentioned axes of curvature. When two magnet wires are placed on the two face portions of the bottom wall and the ram drives a staple into the die cavity, the staple is crimped about the two wires, and ultimately a recess conforming to the front face of the ram is pressed into a face of the crimped staple, causing the metal of the staple and of the crimped wire sections to flow longitudinally of the ridge in the bottom wall, thereby breaking the relatively brittle insulation of the wires and providing direct electrical contact between the connector formed from the staple and the wire ends.

3,685,149

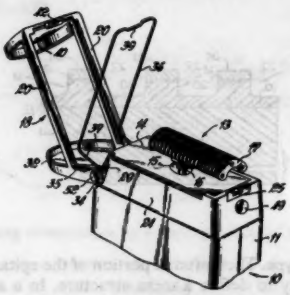
DRY SHAVING DEVICE

Kurt Bauman, Solingen, Germany, assignor to Firma Robert Krups, Solingen-Wald, Germany

Filed Nov. 18, 1970, Ser. No. 90,706

Int. Cl. B26b *19/10*, *19/04*

U.S. Cl. 30—43.92 4 Claims



A dry shaving device, which comprises a driving means and a housing including a head and receiving the driving means. A cutter head is arranged above the head of the housing. The cutter head includes a knife head. A cutter sheet covers over the knife head, and a frame of the cutter head is swingably mounted at one of its ends at a lower lateral range of the head of the housing. A holding element is coordinated to the frame of the cutter head and secures the cutter sheet to the frame of the cutter head. The holding element is designed as a bow capable of being attached to the lower side of the frame of the cutter head. A bearing axle receives independently and swingably the holding element and the frame of said cutter head, and the holding element is repeatedly releasably secured to portions of the frame of the cutter head.

3,685,150

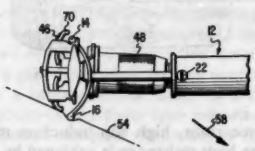
DOUBLE EDGE SAFETY RAZOR EMBODYING FLEXIBLE BLADE PRESSURE CONTROL

Frederick L. Risher, Laurel, Miss., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 29,788, April 20, 1970, abandoned. This application July 27, 1970, Ser. No. 58,539

Int. Cl. B26b *21/32*, *21/52*

U.S. Cl. 30—74.1 7 Claims



The disclosure introduces a new concept in double edge safety razor construction; that of the floating head. A floating head is herein defined as a blade support assembly which is mounted for movement transverse to the path of movement undergone by the pressure guard. A double edge safety razor utilizing a floating head construction of the type herein described for use with double edge blades is insensitive not only to variations in the application of handle pressure but also to other skin aberrations which tend to increase blade pressure. A biased double edge blade support assembly, comprising the floating head, is mounted for controlled pivotal movement toward and away from two skin pressure guards positioned on opposite sides of the razor and integral with the razor handle whereby the principle of the floating head maintains with either of the opposed blade edges. This construction permits a constant blade pressure to be exerted on the skin ir-

respective of which blade edge is in use or the pressure which is exerted on the handle and skin engaging pressure guard.

3,685,151

HYDRAULICALLY OPERATED HAND TOOLS

Rolph Grante, Vancouver, and Byron Andre, Burnaby, British Columbia, both of Canada, assignors to Dynamic Tools Ltd., Vancouver, British Columbia, Canada

Filed July 23, 1970, Ser. No. 57,515
Int. Cl. B26b *17/02*
U.S. Cl. 30—124 9 Claims

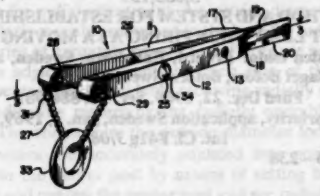
A hydraulically operated tool for cutting multi-strand cable comprises a pair of jaws mounted on a linkage to be opened and closed by a hydraulic piston and cylinder unit. To ensure effective cutting of the cable a cable grip is provided which is manually operable and comprises a pair of jaws close to the cutting jaws of the tool and movable to clamp and release a cable to be cut.

3,685,152

RAZOR BLADE HOLDER

Irving Gish, 106-21 Ave. J., Brooklyn, N.Y.

Filed Aug. 25, 1970, Ser. No. 66,822
Int. Cl. B26b *11/00*
U.S. Cl. 30—296 3 Claims



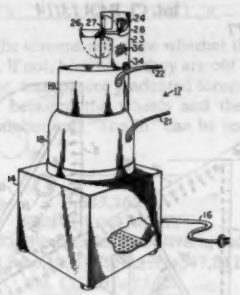
A razor blade holder has been provided formed of two opposing holder parts having inner faces adapted to be brought in flush engagement with one another and having at their ends cooperating line edges for the gripping of the razor blade, the holder parts being connected together adjacent the forward ends by a screw serving as fulcrum when a screw extending between the parts rearwardly of the first screw is threaded with one of the parts to spread the rear ends of the holder parts and cause a line contact gripping engagement with the razor blade when it is to be used in knife blade or scraper fashion. On the rear end of the holder blade parts is a key chain on which keys can be placed and a washer serving as a screw driver for the turning of the screws holding the forward ends of the parts together and serving to spread the holder parts. The forward ends of the inner faces of the parts are grooved to receive a drill-like tool.

3,685,153

YOGURT MACHINE

Edgar B. Borkton, 415 Woodlawn Ave., Chula Vista, Calif.

Filed Jan. 28, 1971, Ser. No. 110,399
Int. Cl. A01j *11/00*; A23c *09/12, 23/00*
U.S. Cl. 31—2 1 Claim



A yogurt machine for automatically manufacturing yogurt in which milk is heated from boiling water in a double boiler. The water is automatically turned off through a thermally-activated switch or a time switch and a thermostatically-controlled switch set at approximately 110° F is activated to the heater which allows the milk to cool to 110° F. At this time, the thermostat switch applies heat to the water holding it at 110° F and a yogurt culture is automatically dumped onto the top surface of the milk either by a timer or through the action of the 110° F thermostat switch.

3,685,154

Patent Not Issued For This Number

3,685,155

FITTING AID

Ruth Oblander, La Grange Park, Ill., assignor to Sew Fit Co., La Grange Park, Ill.

Filed Aug. 24, 1970, Ser. No. 66,219
Int. Cl. A41h *1/02*
U.S. Cl. 33—11 9 Claims

This invention is concerned with the field of sewing and more specifically relates to methods and devices for enabling women to properly fit commercial patterns without the use of tape measures or calculations.

3,685,156

DRAFTING SET FOR DRAWING A BODY IN PARALLEL PERSPECTIVE

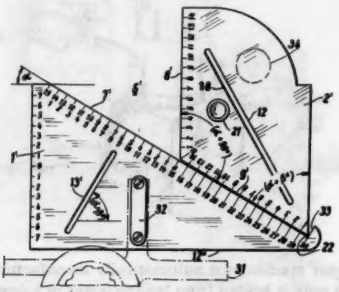
Karl-Heinz Arkenberg, 319 Fabriciusstrasse, 2 Hamburg-Bramfeld, Germany

Filed Sept. 9, 1970, Ser. No. 70,841

Claims priority, application Germany, Sept. 10, 1969, P 19 45 731.9

Int. Cl. B43l *13/14*

U.S. Cl. 33—77 15 Claims



A drafting set for drawing a body in parallel perspective, of which the coordinate of height is vertical, the coordinate of length forms an angle of $\alpha°$ with the horizontal and the coordinate of width forms an angle of $\beta°$ with the horizontal in the drawing plane. The drafting set consists of a pair of angle rulers adapted to one another. The first angle ruler has a guiding edge by means of which it displaceable parallel to itself and vertically on a drawing surface, and a straight locating edge for the second angle ruler and forming an angle of $\alpha°$ with the horizontal. The second angle ruler possesses a first drawing edge for the presentation of height lines, a second drawing edge forming an angle of $\alpha + 90°$ with the first drawing edge for the presentation of width lines and a third drawing edge for the presentation of length lines forming an angle of $\alpha + \beta°$ with said second drawing edge.

3,685,157

TRACK POSITION MEASURING BOGIE

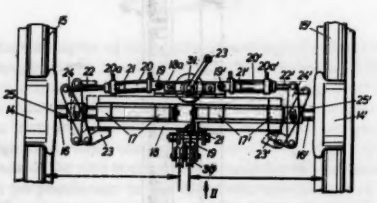
Franz Plasser, Vienna, and Wilhelm Praschl, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.

Filed March 16, 1970, Ser. No. 19,988

Claims priority, application Austria, March 28, 1969, A 3118/69

Int. Cl. B61k *9/08*; E01b *29/04*

U.S. Cl. 33—144 10 Claims



In track surveying or correction apparatus, a measuring bogie with two flanged wheels running on the track rails. The wheels are transversely movable in respect of a carrier for a track surveying element which is to be kept at a constant distance from a selected grade rail. A remotely controllable drive presses the carrier against the grade rail by a drive which is connected with the carrier, on the one hand, and the flanged wheel running on, and in contact with, the other rail.

3,685,158

SONDES WITH ARTICULATED ARMS USED IN WELL LOGGING

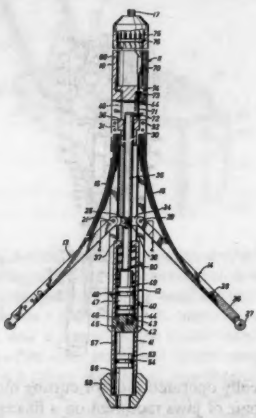
Jean Planche, L'Hay-Les-Roses, Val de Marne, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 770,978, Oct. 28, 1968, abandoned. This application Feb. 16, 1971, Ser. No. 115,767

Claims priority, application France, Nov. 2, 1967, 67126822

Int. Cl. G01b *5/08, 7/12, 13/08, 5/08*

U.S. Cl. 33—178 F 24 Claims



Apparatus for use in making measurement in a well bore includes an elongated body member having at least one pair of wall-engaging members articulated on the body member by arms for lateral movement between retracted positions alongside the body member and extended positions in contact with a well bore wall. Spring means are mounted externally of the body member and function to constantly urge the members outwardly, and means are provided for retracting the members, including a driven member movable upwardly on said body member, and means responsive to upward movement of said driven member for causing said wall-engaging members to move toward retracted positions.

3,685,159

METHOD AND SYSTEM FOR ESTABLISHING A CORRECT LEAD WHEN FIRING AT A MOVING TARGET

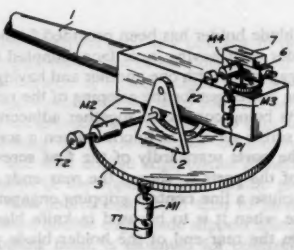
Rune Torsten Isidor Erhard, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 22, 1969, Ser. No. 886,981

Claims priority, application Sweden, Jan. 3, 1969, 96/69

Int. Cl. F41g *3/08*

U.S. Cl. 33—238 7 Claims



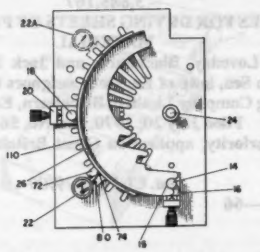
The invention relates to a method and device for computing and providing a correct lead angle between the direction of fire and the line of sight when firing a projectile at a moving target with a weapon and sight system in which the weapon and the sighting instrument are mechanically and/or electri-

cally coupled to each other so as normally to move uniformly. The correct lead angle is computed during a predetermined limited time interval the length of which is proportional to the range to the target. During this computation interval the line of sight of the sighting instrument is maintained pointed directly at the moving target and the weapon is moved uniformly with the sighting instrument without any relative angular velocity between the line of sight of the sighting instrument and the direction of fire of the weapon, while simultaneously the angular velocity of the line of sight is integrated. At the end of the computation interval, over which the angular velocity of the line of sight is integrated, the direction of fire of the weapon and the line of sight of the sighting instrument are deflected from each other by an angle proportional to the result of the integration and in such a direction that the direction of fire of the weapon will lead the line of sight of the sighting instrument as seen in the direction of the target tracking.

3,685,160
BRAKE SHOE CLEARANCE GAGE

Thomas H. MacKeigan, Windsor, Ontario, Canada, assignor to Abex Corporation, New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,303
Int. Cl. G01b *5/14*
U.S. Cl. 33—181 AT **8 Claims**



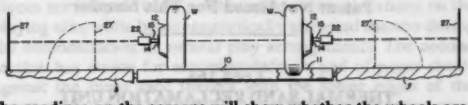
A brake lining gage is disclosed for supporting a brake shoe in a test plane to measure the clearance or interference between various points on the lining and a simulated standard brake drum. The gage has a base on which parts of a brake mechanism are adjustably simulated. A center post mounted on the base simulates the center of a standard brake drum. Various size anchor pins are movably mountable individually on the base for radial adjustment. An outside diameter locater post is similarly movably mounted to the base for radial adjustment. A series of arcuately spaced radial slots are provided in the base in adjacent quadrants on each side of the outside diameter locater post for slidably receiving radially adjustable distance indicating meters having radially operable sensing members. The anchor pin, the outside diameter locater post, and the meters are accurately adjusted into position with reference to the center post by means of setting bars which seat at one end against the center post and are radially aligned toward the piece being adjusted. A set of several such setting bars is provided corresponding to various standard brake mechanism dimensions.

3,685,161
APPARATUS FOR TESTING FRONT WHEEL ALIGNMENT

Roger MacPherson, Rochester, N.Y., assignor to American Tatra Inc., Rochester, N.Y.

Filed July 6, 1970, Ser. No. 52,542
Int. Cl. G01b *13/18*
U.S. Cl. 33—288 **5 Claims**

This apparatus permits checking the front wheel alignment of automotive vehicles while the wheels are rotating. The front wheels are driven onto two rollers, and special hubcaps are mounted on the wheels, which carry optical devices that are centered by means of the centering holes, provided in manufacture, in outer ends of the steering spindles of the front axle of the vehicle. Each optical device includes a source of light and a lens system through which the light is transmitted to graduated screens mounted at the two sides of the vehicle.

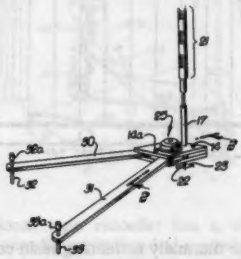


The readings on the screens will show whether the wheels are in alignment, and, if not, how much they are out of alignment. For testing camber, transparent graduated screens are pivotable into position between the wheels and the first-named screens, so that camber and "Toe In" can be read simultaneously.

3,685,162
SURVEYOR SIGHT

Horace H. Haun, 9240 Burke St., Pico Rivera, Calif.

Filed June 19, 1970, Ser. No. 47,811
Int. Cl. G01c *15/06*
U.S. Cl. 33—295 **7 Claims**

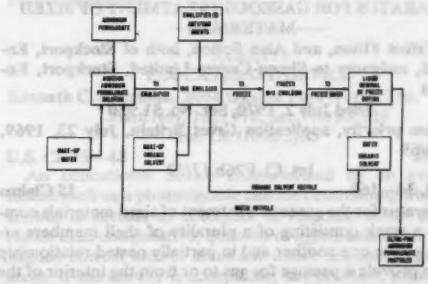


Sighting apparatus, usable in surveying, comprises a base and a first support therefor; a standard to support a rod or target and mounted on the base to extend upright directly above the first support; second and third supports including a pair of elongated legs having adjustable pivotal attachment to the base accommodating relative swinging of the legs through wide, generally horizontally extending arcs; and, level indicator means on the base to indicate when the standard extends vertically.

3,685,163
METHOD OF PRODUCING FINE PARTICLE AMMONIUM PERCHLORATE

Robert L. Olt, La Vale, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed March 16, 1971, Ser. No. 124,702
Int. Cl. F26b *5/06*
U.S. Cl. 34—5 **12 Claims**



A process for preparing ultra-fine ammonium perchlorate particles is provided. In this process an aqueous solution of ammonium perchlorate is dispersed in an organic liquid to

form a water-in-oil emulsion. The emulsion is frozen and freeze dried to produce the ultra-fine particles.

3,685,164

Patent Not Issued For This Number

3,685,165

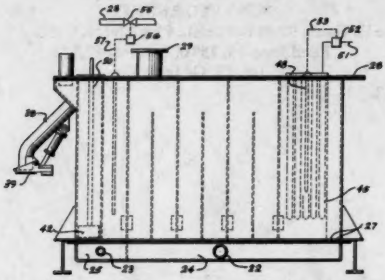
THERMAL SAND RECLAMATION UNIT

Vagn Deve, Pittsburgh, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 12, 1970, Ser. No. 79,951

Int. Cl. F26b *17/00*

U.S. Cl. 34—57 A **8 Claims**



Apparatus for thermally reclaiming resin coated sand comprising a plurality of vertical chambers in which the sand is fluidized. The chambers are in series flow relationship proceeding from an inlet chamber to a heating chamber and then to an outlet chamber. The intermediate heating and cooling chambers have a common wall between them so that heat is transferred from the sand to be cooled to the incoming sand. The heat input to the heating chamber is controlled in response to the sand temperature in that chamber. The fluidizing air to the inlet and outlet chambers may be separated from the remainder of the fluidized air and controlled in response to the outlet sand temperature by increasing the activity in the inlet and outlet chambers to reduce sand temperature and by decreasing the activity to reduce the outlet sand temperature. The inlet chamber is segmented to provide for the removal of heavy particles introduced to that chamber on an intermittent basis.

3,685,166

APPARATUS FOR GASEOUS TREATMENT OF SIZED MATERIALS

John Talbot Fitton, and Alan Sutton, both of Stockport, England, assignors to Simon-Carves Limited, Stockport, England

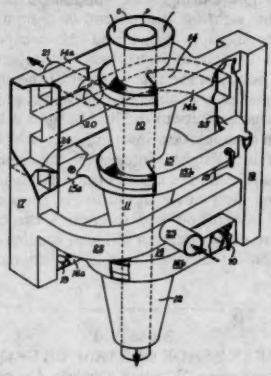
Filed July 2, 1970, Ser. No. 51,920

Claims priority, application Great Britain, July 23, 1969, 36,930/69

Int. Cl. F26b *17/12*

U.S. Cl. 34—168 **15 Claims**

Apparatus for the gaseous treatment of sized materials comprising a stack consisting of a plurality of shell members arranged above one another and in partially nested relationship so as to provide a passage for gas to or from the interior of the stack at the junctions between adjacent shell members, means for feeding the material to be treated into the uppermost shell member for downward flow through the stack, means for discharging the material at a controlled rate from the bottom end of the lowermost shell member, aNd chambers at the



junctions between adjacent shell members for the supply or exhaustion of treatment gases to or from the stack.

3,685,167

MACHINES FOR DRYING SHEETS OF PAPER OR LIKE MATERIAL

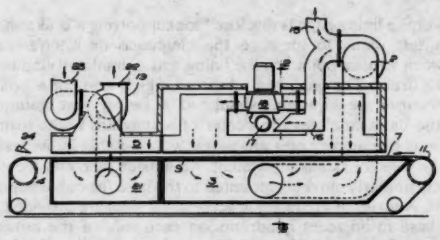
Harry W. Loveday, Blackburn, and Jack D. Whittaker, St. Annes on Sea, both of England, assignors to Greenbank Engineering Company Limited, Blackburn, England

Filed July 20, 1970, Ser. No. 56,409

Claims priority, application Great Britain, July 29, 1969, 37982/69

Int. Cl. F26b *19/00*

U.S. Cl. 34—66 **8 Claims**



A high speed drying machine for sheets of paper coated with varnish or the like in which the sheets pass on a perforated conveyor firstly between an upper chamber from which high temperature air at high velocity is discharged through apertures onto the conveyor and a lower from which air is withdrawn to create a vacuum which retains the sheet on the conveyor and secondly through similar chambers to which cold air is supplied.

3,685,168

METHOD OF AND MEANS FOR INDICATING THE POSITION OF A CUP IN A GOLF COURSE GREEN

Edward G. Reitz, 339 Walnut St., Newport Beach, Calif.

Filed July 13, 1970, Ser. No. 54,506

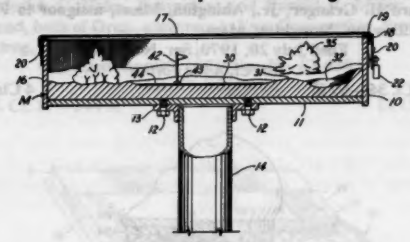
Int. Cl. G09b *29/10*

U.S. Cl. 35—7 A **3 Claims**

An indicating method and device located at the tee of a hole of a golf course for indicating to a player the location of the cup in the green of the hole.

The device is a relief model of the green, including the surrounding environment, having markings providing coor-

dinates for locating a marker on the model green corresponding to the location of the cup on the actual green as determined by measurements of the location of the cup relative to a reference point.

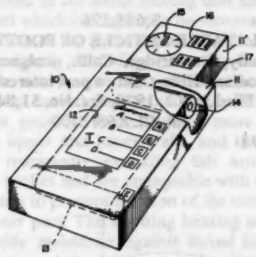


3,685,169

TEACHING METHOD AND APPARATUS

Theodore H. Blau, and Lawrence R. Bennett, both of Tampa, Fla., assignors to Theodore Blau, Tampa, Fla.

Filed Jan. 22, 1970, Ser. No. 4,900
Int. Cl. G09b 7/06
U.S. Cl. 35—8 R 6 Claims



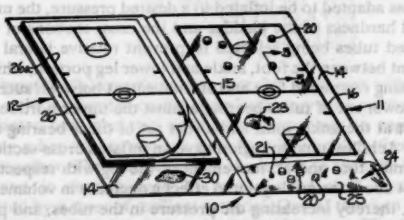
A method of teaching wherein the span of attention of a student is determined by presenting the student with informational material and related questions in successive time periods, counting the number of questions answered and the number of erroneous answers in successive timer periods to determine when a significant increase in errors occurs, and thereafter presenting instructional material to the student only for his thus determined attention span. An apparatus including means for presenting instructional material and questions, means for counting questions and errors, and means for timing.

3,685,170

GAME INSTRUCTIONAL APPARATUS

Kenneth F. Fairleigh, 3500 Tinkerbell Lane, Mecklenburg, N.C.

Filed Jan. 19, 1971, Ser. No. 135,205
Int. Cl. G09b 1/08
U.S. Cl. 35—29 R 9 Claims



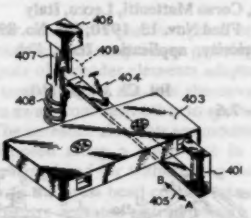
A portable instructional apparatus for visually demonstrating play arrangements on a playing area and facilitating recording the play arrangements. The apparatus comprises a folder having first and second foldably interconnected substantially rectangular sections, the first of which has a playing area printed thereon with a storage pocket therebelow for storing magnetic playing pieces therein. The magnetic playing pieces are adapted to be positioned at various locations on the playing area while being magnetically attracted thereto during the demonstration of various play arrangements. The second section has means for accommodating a pad of paper sheets against the inner face thereof with the lower edges of the sheets spaced from the lower edge of the second section so as to nestingly accommodate the storage pocket therebelow when the folder is closed with the playing pieces positioned in the pocket.

3,685,171

INSTRUCTIONAL TAPE RECORDER

Masahiro Kosaka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1970, Ser. No. 95,709
Int. Cl. G09b 5/04; G11b 5/00
U.S. Cl. 35—35 C 11 Claims



An instructional tape recorder has a recording and a reproducing means for recording and reproducing an instructional tape which has an instructional program recorded intermittently thereon and can have the oral response of a learner to said instructional program recorded thereon on the parts of the tape between the parts of the instructional program. The instructional tape recorder is provided with a selecting switch to enable it to be used both as a conventional tape recorder and as an instructional tape recorder. This makes possible good interchangeability of a magnetic tape between the instructional tape recorder and a conventional tape recorder.

The magnetic tape having the instructional program thereon is protected against unintentional erasure of the program by an electrically conductive sheet attached to the tape case or by a break out lug in the back edge of the tape case containing the magnetic tape.

The magnetic tape is divided into four recording tracks for economy reasons, and two of said recording tracks are used for recording and reproducing the instructional program ad the oral responses of a learner, and the remaining two are used for recording and reproducing another instructional program and the oral responses of a learner when the magnetic tape case is turned over.

3,685,172

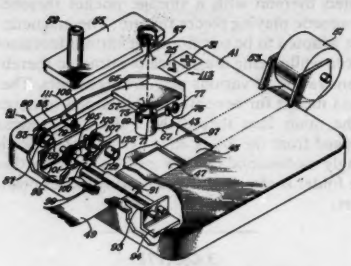
EDUCATIONAL DEVICE

Kenneth C. Hageman, 2044 Glenco, Fort Worth, Tex.

Filed Nov. 18, 1970, Ser. No. 90,525
Int. Cl. G09b 3/02
U.S. Cl. 35—48 29 Claims

An educational device characterized by an evaluation means such as a photoelectric cell for determining whether an answer is correct or incorrect in response to an absolute, rather than comparative, quantity of light transmitted through aligned correct answer areas and direct response registration areas. If the answer is acceptable, the problem, answer, and response means are advanced. If the response is determined to be incorrect, only the response registration means is advanced and the student is asked to repeat the problem. In one embodi-

ment, an anti-frustration means is provided to advance to the next problem after a predetermined number of incorrect answers are registered. Also disclosed are specific structural and schematic features.



3,685,173

CRAMPON

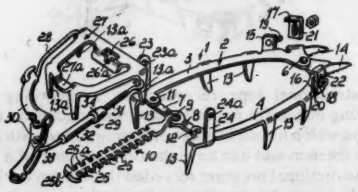
Aldo Piazza, Corso Matteotti, Lecco, Italy

Filed Nov. 13, 1970, Ser. No. 89,383

Claims priority, application Italy, Feb. 14, 1970, 20642 A/70

Int. Cl. A43b *3/10*

U.S. Cl. 36—7.6 **4 Claims**



A crampon for application to climbing boots for walking tours and the like on icy surfaces consisting of two frameworks to be fit with the lower portion of a boot and tie and lever assembly for removably securing the crampon to a boot.

3,685,174

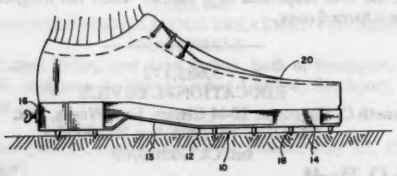
DETACHABLE CLEATS

Robert E. Artle, Jr., 5117 Camino de la Vista, El Paso, Tex., and Frank Romero, 1217 Meadow View Dr., El Paso, Tex.

Filed Dec. 4, 1970, Ser. No. 95,023

Int. Cl. A43b *3/10*

U.S. Cl. 36—7.6 **18 Claims**



A device for use in removably attaching cleats or the like to the sole of an ordinary shoe. Ground engaging cleats are attached to a plate which is of a design and shape to fit under the sole of an ordinary shoe and is provided with means for removably attaching itself to the sole. These attachment means have a sole engaging portion adjacent the toe of the device and a heel engaging portion which attaches to the heel of the shoe.

3,685,175

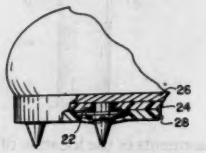
GOLF SHOE CLEAT AND SUPPORT THEREFOR

Edward H. Granger, Jr., Abington, Mass., assignor to F. C. Phillips Inc., Stoughton, Mass.

Filed July 20, 1970, Ser. No. 56,467

Int. Cl. A43c *15/00*

U.S. Cl. 36—67 R **4 Claims**



A golf shoe having a plurality of extending cleats embedded in its bottom and fixed to an integral plate having V-shaped grooves, the apex of each of the grooves defining a hinge. The plate profile corresponds substantially to the shoe bottom profile. Each of the cleats includes a circular head and an axially extending socket having a tapered core concentric therewith and crimped therein, the tip of the core projecting from the socket.

3,685,176

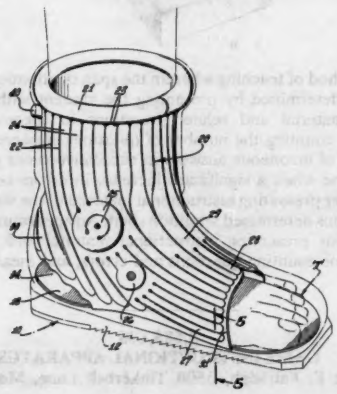
INFLATABLE ARTICLE OF FOOTWEAR

Marion F. Rudy, Northridge, Calif., assignor to Robert C. Bogert, Woodland Hills, Calif., a part interest

Filed July 2, 1970, Ser. No. 51,841

Int. Cl. A63f *5/00*

U.S. Cl. 36—71 **33 Claims**



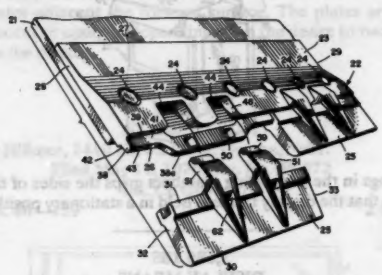
Footwear comprising an inflatable bladder to be disposed in a boot for embracing a person's foot, ankle and lower leg portion, and having a plurality of intercommunicating flexible tubes adapted to be inflated to a desired pressure, the material and hardness of the bladder and the cross-sections of the inflated tubes being selected to prevent relative lateral movement between the foot, ankle and lower leg portion, while permitting restrained fore and aft movement between such parts. A lower set of tubes bearing against the upper portion of the foot at the ankle joint and a rear set of tubes bearing against the Achilles' tendon region have an inflated cross-section that permits fore and aft movement of the leg with respect to the foot about the ankle joint to effect a decrease in volume of one set, thereby increasing the pressure in the tubes, and producing a corresponding increase in volume and inflation of the other set, to exert a greater downward force holding the bottom of the foot firmly against the heel and sole of the boot.

3,685,177

TWO PIECE CUTTING EDGE

Frederick C. Hahn, Beaverton, and Ronald R. Miller, Portland, both of Oreg., assignors to Esco Corporation, Portland, Oreg.

Filed Aug. 13, 1970, Ser. No. 63,450
Int. Cl. E02f 9/28
U.S. Cl. 37—141 R 11 Claims



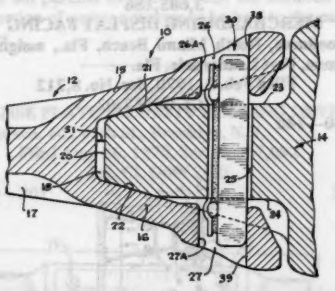
A two part cutting edge structure for an earth moving unit includes a first or adapter part which is adapted to be removably secured to the earth moving unit and a second or cutting edge part which is adapted to be removably secured to the first part. Each of the parts is generally elongated and includes a longitudinally extending, generally flat bearing surface arranged in side-by-side relation, and the other longitudinal edge of the second part provides a cutting edge. The adapter part is provided with two or more spaced-apart sockets having upper and lower walls, and the cutting edge part includes rearwardly extending tab arms which are received in the socket and are engageable with the upper and lower socket walls to prevent rotation of the cutting edge part about the adapter part. The abutting bearing surfaces of the two parts provide resistance against thrust loading on the cutting edge part, and the tab arms and sockets provide resistance against beam loading on the cutting edge part.

3,685,178

DIPPER TEETH

Thomas A. Ratkowski, Chicago Heights, Ill., assignor to Abex Corporation, New York, N.Y.

Filed July 10, 1970, Ser. No. 53,854
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 4 Claims



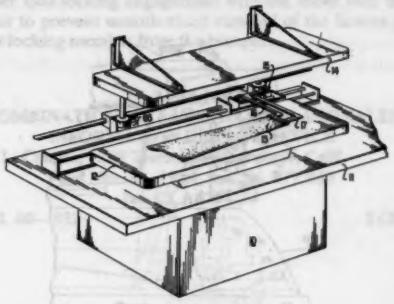
A dipper tooth comprising a replaceable point part with opposed walls is mounted on the complementary nose portion of an adapter part, the two parts having openings in registry defining a key-way to receive a retainer key holding the two parts together. The retainer key is of a length to span the key-way, and is characterized by two parallel rigid sections separated by a layer of resilient material. One of the rigid sections is the back and the other the front of the key. The front of the key has protuberances thereon normally fitting in corresponding sockets presented by the key-way.

3,685,179

GARMENT SPREADING APPARATUS

Sid Michaels, Knoxville, Tenn., assignor to Levi Strauss & Co., San Francisco, Calif.

Filed March 30, 1971, Ser. No. 129,516
Int. Cl. D06f 71/18, 71/40
U.S. Cl. 38—21 21 Claims



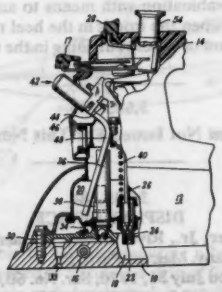
An apparatus for use with a garment press or the like for spreading portions of a garment prior to pressing is provided which features a pair of spreader elements adapted to receive the bottom of a trouser leg or the like thereover and being relatively movable away from each other to spread the trouser leg for pressing. The spreader elements are mounted on a platform movably disposed along a given line in response to operation of a pressing head for withdrawing them from the garment just prior to the press head coming into contact with the garment. A pressure actuated piston having a rack on one end drives a pinion carried on a shaft supporting another pinion which engages racks formed on the spreader elements for spreading these elements. Another pressure actuated piston operates to move the platform away from the trouser leg. Closing of the spreader elements may be effected by a spring biasing the shaft on which the pinions are mounted against movement by the piston or, alternatively, by a dual rack arrangement engaging the driving pinion and operatively connected with both pistons. In addition, the platform is angularly adjustable relative to the line of movement for displacing the spreader elements relative to the longitudinal axis of the press pad.

3,685,180

ADJUSTABLE SPRAYER IRON

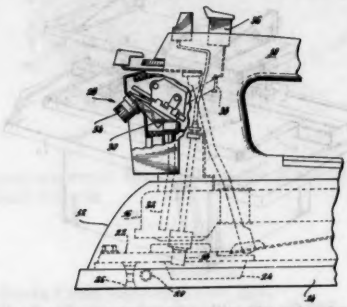
William E. Davidson, Ontario, Calif., assignor to General Electric Company

Filed Oct. 27, 1970, Ser. No. 84,411
Int. Cl. D06f 75/06
U.S. Cl. 38—77.5 6 Claims



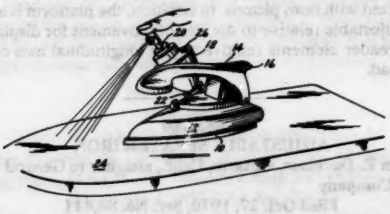
The disclosure shows a steam and spray iron having an adjustable sprayer assembly with means to vary the spray flow rate through the sprayer by varying the steam flow on each manual operation of the sprayer.

3,685,181
ADJUSTABLE MANUAL SPRAY IRON
William E. Davidson, Ontario; Wendell C. Walker, Alta Loma, and Harold S. Foster, Huntington Beach, all of Calif., assignors to General Electric Company
Filed June 11, 1971, Ser. No. 152,333
Int. Cl. D06f 75/06
U.S. Cl. 38—77.5 9 Claims



A flatiron having a spray assembly for operation to spray the fabric being ironed. The spray assembly has a rotatable cap with a plurality of offset and different size orifices whereby different liquid spray rates may be selected by selecting and rotating one of the radially offset orifices into registering position.

3,685,182
STEAM AND SPRAY IRON
William E. Davidson, Ontario, and Wendell C. Walker, Alta Loma, both of Calif., assignors to General Electric Company
Filed May 10, 1971, Ser. No. 141,811
Int. Cl. D06f 75/06
U.S. Cl. 38—77.3 8 Claims

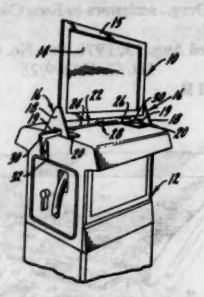


A steam and spray iron with an externally coupled vented water supply tank having a sprayer oriented to spray in front of the iron in combination with means to automatically shut off the steaming when the iron is in the heel rest position with a minimum amount of water remaining in the tank.

3,685,183
Patent Not Issued For This Number

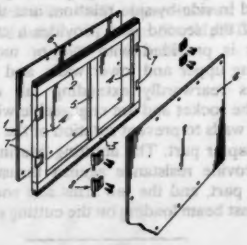
3,685,184
DISPLAY DEVICE
Harlan K. Snyder, Jr., River Forest, Ill., assignor to Chicago Display Company, Melrose Park, Ill.
Filed July 31, 1970, Ser. No. 60,026
Int. Cl. G09f 7/00
U.S. Cl. 40—125 H 7 Claims

A display device for exhibiting advertising material on an object, such as a gasoline pump, wherein there is provided a rectangular display frame for retaining the display material. A pair of supporting members are attached on opposite sides of the frame. An adjustable gripping assembly passing through



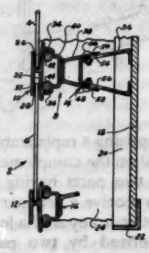
openings in the supporting members grips the sides of the object so that the display frame is held in a stationary position.

3,685,185
DISPLAY MEANS
Brian Charles Bannister, North Mymms, England, assignor to Marler Haley (Manufacturing) Limited, Barnet, England
Filed Dec. 1, 1969, Ser. No. 881,142
Int. Cl. G09f 7/14
U.S. Cl. 40—125 F 3 Claims



The invention provides a display means comprising one or more display panels removably mounted between free-standing posts by means of downwardly projecting pin members at the vertical edges of the panels, the pin members engaging apertures in members secured to the posts.

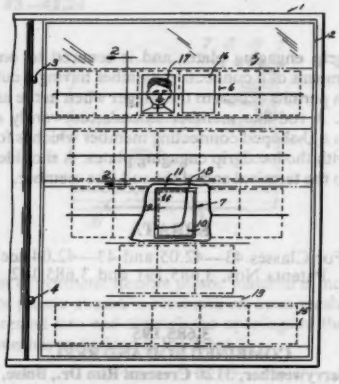
3,685,186
MERCHANDISING DISPLAY FACING
Irving Goodman, North Miami Beach, Fla., assignor to Lee Haberman, Fort Lauderdale, Fla.
Filed Feb. 3, 1970, Ser. No. 8,212
Int. Cl. G09f 7/02
U.S. Cl. 40—140 6 Claims



A merchandising display facing including a plurality of interlocking indicia plates, and a plurality of holding means for securing the plates in position on the display facing. The hold-

ing means includes rails that are connected to a background backing paneling of the display sign supporting structure when indicia plates are supported by the holding means. The holding means includes rails connected to adjustable mounting means that are connected to an existing display sign supporting structure when combination indicia-background plates are supported by the holding means. The interlocking plates include either indicia material or a combination of indicia-background material between the forward and rear surfaces of the plates adjacent the forward surface. The plates are both translucent or opaque, depending upon the desire to back-illuminate the display.

3,685,187
STAMP ALBUM
Duane Hillmer, 1410 Kiewit Plaza, Omaha, Nebr.
Filed May 11, 1970, Ser. No. 36,372
Int. Cl. G09f 1/10
U.S. Cl. 40—159 **2 Claims**



A postage stamp album having a transparent sheet covering the stamps. A single sheet is laminated to an album page by means of parallel adhesive strips but unadhered in intervening bands. Between the strips, there are printed broad lines which outline spaces for stamps to be placed on the various parts of the page and legends within the outlines designating the stamp for each position. The stamp is a little smaller than the outline so that the outline provides a dark background for the stamp. The film is slit parallel to and between the adhered strips to permit insertion of postage stamps to be held to the paper over the outlines.

3,685,188
LICENSE PLATE SECURITY LOCKING DEVICE
James Syversen, 402 45th St., Brooklyn, N.Y.
Filed Aug. 26, 1970, Ser. No. 67,092
Int. Cl. G09f 7/00
U.S. Cl. 40—201 **5 Claims**

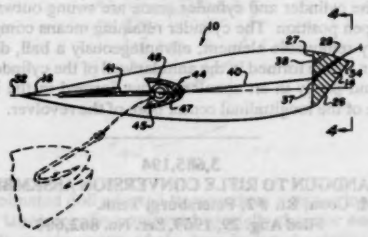
A license plate fastening and locking system by which a motor vehicle license plate is locked in place directly on a support, e.g., the bumper, of a motor vehicle. At least one key operated locking member fastens the license plate to the bumper. The locking member includes an outer cylinder passing through openings in the license plate and bumper, with the outer cylinder having an annular end collar clamping the license plate against the outer face of the bumper. A key plug extends through a central bore of the outer cylinder and is key operated between unlocked and locked positions. When moved to the locked position, the plug actuates a locking retaining member positioned adjacent the inner end of the cylinder into locking engagement with the inner face of the bumper to prevent unauthorized removal of the license plate and/or locking member from the bumper.

3,685,189
COMBINATION SKI PANTS HANGER AND SALES INFORMATION DISPLAY DEVICE
David L. Conger, 1508 Tennessee St., Vallejo, Calif.
Filed Nov. 24, 1969, Ser. No. 879,053
Int. Cl. A47f 7/19
U.S. Cl. 40—322 **2 Claims**

A ski-pants hanger comprising a substantial C-shaped frame member having an upper leg for hook-over engagement with a hanger support rod and provided with a reinforcing rib which defines an elongate planar upper display surface for removably supporting printed sign product and pricing information.

3,685,190
Patent Not Issued For This Number

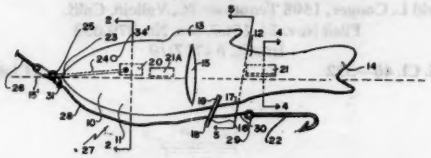
3,685,191
FISHING LURE
Carl P. Metzger, 180 Burnside Rd., Victoria, British Columbia, Canada
Filed Feb. 5, 1971, Ser. No. 112,932
Int. Cl. A01k 85/00
U.S. Cl. 43—42.05 **5 Claims**



A lure attachable to a leader securing a hook to a fishing line. The lure is shaped to simulate a strip of fish bait and has a body and a relatively wide head which is provided with a leading edge which acts as a planing surface and a top edge. Holes are drilled through the head to emerge on the top edge and the leader slidably extends through a selected one of the holes initially to position the hook alongside the body. The curved shape of the body, the planing action of the leading edge, and

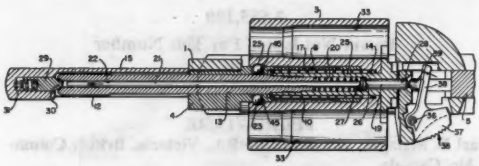
the spacing of the leader relative to the leading edge as determined by the hole selected to receive the leader, all combine to give a particular swimming action to the lure as it is drawn through the water.

3,685,192
FISH LURE
Frank C. Stibbard, 185 Wellington St., Belleville, Ontario, Canada
Continuation-in-part of Ser. No. 849,943, Aug. 12, 1969, abandoned. This application Feb. 20, 1970, Ser. No. 13,035
Int. Cl. A01k *85/02*
U.S. Cl. 43—42.04 **21 Claims**



A fish shaped lure of soft resilient plastic with neutral buoyancy imparting means formed therein. A line attaching nose wire extends forwardly and a snelled hook is also attached to this nose wire. The snelled hook is detachably held along the underside of the line until a fish strikes whereupon it detaches from the underside so that the strain of the fish is taken directly to the nose wire and hence to the line.

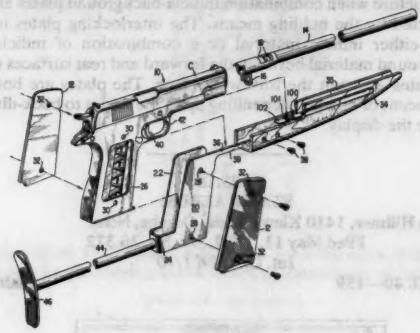
3,685,193
REVOLVER CYLINDER RETAINING MEANS
Harry H. Sefried, II, New Haven, Conn., assignor to Ruger Sturm & Co., Inc., Southport, Conn.
Filed June 12, 1970, Ser. No. 45,663
Int. Cl. F41c *1/00*
U.S. Cl. 42—62 **7 Claims**



A revolver having a cylinder that is rotatably mounted on the cylinder pivot shaft of the cylinder crane is provided with means for retaining the cylinder on the cylinder pivot shaft when the cylinder and cylinder crane are swung outwardly to their open position. The cylinder retaining means comprises a laterally removable element, advantageously a ball, disposed partly in a hole formed in the annular wall of the cylinder pivot shaft and partly in an annular groove formed in the interior surface of the longitudinal center bore of the revolver.

3,685,194
HANDGUN TO RIFLE CONVERSION ASSEMBLY
John M. Coon, Rt. #2, Petersburg, Tenn.
Filed Aug. 29, 1969, Ser. No. 862,600
Int. Cl. F41c *21/00, 23/00*
U.S. Cl. 42—77 **6 Claims**

An assembly for converting a handgun to a rifle wherein an elongated rifle barrel having locking means thereon which is identical to the locking means on the handgun barrel is substituted within the handgun in place of the conventional short handgun barrel. The handgrip cover plates are removed from the handgun and the handgun with the rifle barrel inserted therein is placed between a pair of handgrip engaging plates which form a portion of a rifle stock. The handgrip cover plates are placed on the outer faces of the handgrip engaging plates and a pair of securing members are inserted through aligned apertures in the handgrip cover plates, the handgrip engaging plates and the handgrip to secure the handgun within the rifle stock. A handrest stock member extends forwardly of

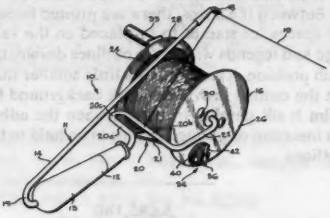


the handgrip engaging plates and is secured to one of the plates by means of a connecting member having a cutout portion which permits access to the trigger when in the assembled condition. A rod-like member extends rearwardly of and is secured to a U-shaped connecting member which is formed integrally with the handgrip engaging plates. A shoulder plate is secured to the terminal end of the rod-like member.

ERRATA

For Classes 43—42.05 and 43—42.04 see:
Patents Nos. 3,685,191 and 3,685,192

3,685,195
COMBINED ROD AND REEL
Gerald Merryweather, 3120 Crescent Rim Dr., Boise, Idaho
Filed Aug. 20, 1970, Ser. No. 65,385
Int. Cl. A01k *87/00*
U.S. Cl. 43—18 **7 Claims**



A combined rod and reel includes a J-shaped rod having a short section and a shank lying substantially parallel to the short section, which has a handle thereon. A reel containing a coiled line is mounted for rotation at the outer end of the short section.

3,685,196
SELF-RELEASING ATTACHMENT DEVICE FOR FISHING
John Grayson Scott, 2401 Monroe St., Paducah, Ky.
Filed Nov. 13, 1969, Ser. No. 870,130
Int. Cl. A01k *91/02, 95/00*
U.S. Cl. 43—43.12 **5 Claims**

An attachment device for utilization with a casting plug or other type of fishing lure is provided that enables a fisherman to greatly extend the distance of his cast. The device includes a water-soluble perforated disc-like pellet having string ends extended therefrom for adhesive attachment to a preselected

bait or sinker element. The device is preferably attached to a fishing line by slipping the pellet over the end of a fish hook appended to the lure or line. Dissolution of the pellet, when

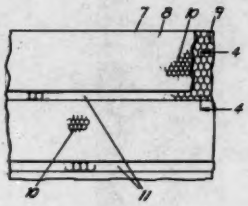
the lure is cast into the water, releases the device from the lure whereupon the lure can be retrieved by the fisherman reeling in his line in the usual manner.

3,685,197

SIMULATED PORK RIND FISHING LURE

Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.

Filed Aug. 17, 1970, Ser. No. 64,526
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.24 **2 Claims**



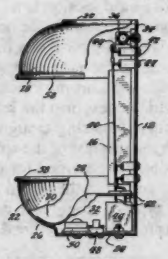
A sheet of synthetic flexible plastic material is molded over a sheet of plastic strands woven into an open mesh, with the plastic pressed into and through the openings of the mesh so that the mesh is embedded in the sheet.

3,685,198

INSECT ATTRACTING AND DESTROYING DEVICE

Charles N. Smith, Venice, Fla., assignor to Insect-J-Var Corporation, Venice, Fla.

Filed Sept. 11, 1970, Ser. No. 71,614
Int. Cl. A01m *1/22*
U.S. Cl. 43—112 **5 Claims**



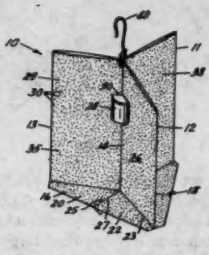
A device for attracting and destroying flying insects which includes an electrified grid, a light source, a heating chamber, flue, and heat trapping chamber. Insects are attracted by the light, electrocuted upon contacting the grid, and collected adjacent the heating chamber. Their bodies are heated by the heat source, causing an odor to rise past the electrified grid and to disseminate from the device. The odor assists in attracting other insects to the electrified grid. A cowling design is also provided to trap a portion of the heat and odors generated. A perpetual and accelerated attraction of other insects to the electrified grid is created.

3,685,199

INSECT TRAP

Thomas I. Bradshaw, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 24, 1970, Ser. No. 74,977
Int. Cl. A01m *1/14*
U.S. Cl. 43—114 **4 Claims**



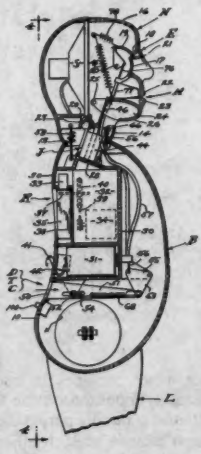
A disposable, collapsible insect trap comprising a suitable flexible material folded into a configuration characterized by three or more vanes surrounding a central axis, thereby exposing a relatively large surface area which has thereon an insect attractant and a tacky material to hold insects on said trap after they are attracted thereto.

3,685,200

ELECTRONICALLY AND MANUALLY ANIMATED TALKING DOLL

Evelyn Noll, 937 Lincoln Blvd., Santa Monica, Calif.

Filed Sept. 14, 1970, Ser. No. 72,035
Int. Cl. A63h *33/26*
U.S. Cl. 46—232 **9 Claims**



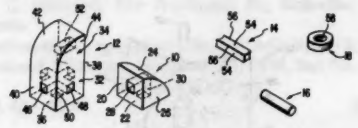
An animated doll adapted to reproduce a transcribed voice from a tape recording prepared specially therefor and automatically moving parts of the face in timed relation to the reproduced audible voice, and providing means in combination therewith to be manually operated for the coordinated movement of parts of the face; all of which is directed to amusement, education and for the development of coordination and dexterity in individuals observing and operating the doll. Means are also provided for shutting off the voice and moving an automatically moved face part independently of the use of the reproduced voice.

3,685,201

CONTAINER WITH A FIXED NUMBER OF ELEMENTS

Hieronimus Robert Drieze, Nr. 108 Gronausestraat, Enschede, Netherlands

Filed Nov. 4, 1971, Ser. No. 195,576
Int. Cl. A63h *33/10*
U.S. Cl. 46—26 10 Claims



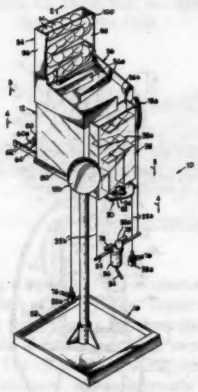
A building block set which allows the assembly of a variety of stances and/or postures of a canine figure includes two basic building block units. One is a quadrant of a right circular cylinder and the other is a somewhat larger unit having a rectangular base portion integral with and surmounted by a quadrant of a right circular cylinder. The inner faces of the first unit are of identical rectangular size and shape as is the smaller inner face of the other unit. The larger inner face of the other unit is twice the size of its smaller face and all of the inner faces are provided with recesses to receive pegs which join the units as desired.

3,685,202

BALL CARRIER

Howard J. Morrison, Highland Park, Ill., assignor to Marvin Glass & Associates

Filed March 24, 1971, Ser. No. 127,576
Int. Cl. A63h *33/30*
U.S. Cl. 46—40 12 Claims



A novelty device which includes an upright frame, and a pair of pulleys rotatably mounted on the frame by means of shaft members oriented generally perpendicular to each other and vertically spaced relative to each other. A cord is passed over each of the pulleys, the cords being secured at one of their ends to opposite sides of a receptacle, with counterweights secured to the other ends of the cords, each of the counterweights being heavier than the receptacle. Weighted loads are delivered individually to the receptacle when the receptacle is in a highest position, with the individual weighted loads supported by the receptacle. The combined weight of a supported load and receptacle is heavier than either of the counterweights attached to the ends of the cords, the receptacle and supported load thereby being capable of lowering by gravity to a lowermost position. The weighted loads are discharged automatically at a lowermost position of the receptacle whereby the receptacle automatically returns to its highest position and thereby oscillates vertically due to the biasing of the counterweights on the ends of the cords and the delivery and discharge of the weighted loads. A governor device is operatively associated with the pulleys to effect intermittent vertical movement of the receptacle during its oscillatory movement.

3,685,203

Patent Not Issued For This Number

3,685,204

DECORATIVE PLANT TOTEM

Russell L. O'Harra, 531 41st St., Des Moines, Iowa

Filed Oct. 5, 1970, Ser. No. 72,923
Int. Cl. A01g *17/14*
U.S. Cl. 47—47 9 Claims

A support for vining house plants including a base section having frangible leg portions disposed in a pot and one or more upstanding hollow totem sections with perforated exterior walls to allow the roots on the stems of the plant to penetrate through the perforations and receive nourishment from water and soluble plant food stored in the totem unit. As the plant grows taller additional totem sections may be added and a removable decorative cover is provided for the top end of the top section. The base section is a cross in cross section and provides maximum strength while occupying a minimum of space. The totem unit may have any desired design including an upstanding pole, a sphere or be shaped like a bird or animal. The sphere-shaped unit may include two semi-spherical members to provide access into the interior of the unit and also include an annular watering trough having openings in communication with the interior of the sphere.

Typically a fern totem is provided for growing house plants and eventually it will rot off in the soil in the pot thereby ruining the plant. This type of a support does not provide any moisture or nutrients for the plant to feed upon as it grows.

3,685,205

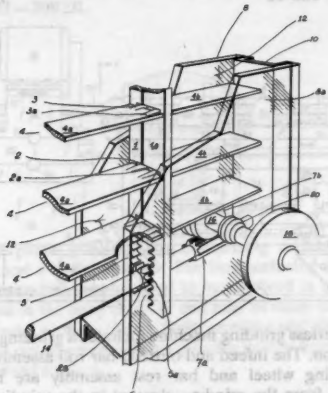
WINDOW AND VENETIAN-BLIND ASSEMBLIES FOR REGULATING LIGHT TRAVEL

Jorge Federico Requena, Rua Raul Pompera No. 131, ap. 506, Rio de Janeiro, Brazil

Filed Nov. 16, 1970, Ser. No. 89,591
Claims priority, application Brazil, Dec. 12, 1969, T.215,077
Int. Cl. E06b *7/08*
U.S. Cl. 49—64 5 Claims

An assembly for regulating the travel of light. The assembly includes a pair of transparent sheets which are mutually

spaced and parallel to each other, these sheets being interconnected by a peripheral frame which defines with the sheets a hollow enclosure sealed off from the outer atmosphere. Within this enclosure is located a plurality of parallel Venetian-blind slats. A tilting mechanism is also located within the



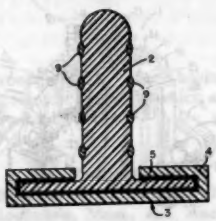
enclosure and operatively connected with the slats for tilting the latter. This tilting mechanism is operated from the exterior of the enclosure, which is maintained sealed from the outer atmosphere, so that in this way the travel of light through the transparent sheets can be regulated.

3,685,206

LOW-FRICTION ABRASION-RESISTANT PLASTIC WEATHERSTRIP

Gerald Kessler, 388 Cranberry Run, Boardman, Ohio

Filed Sept. 28, 1970, Ser. No. 76,137
Int. Cl. E06b 7/16
U.S. Cl. 49—489 **3 Claims**



An extruded all-plastic weatherstrip of the type having a rigid base insertable into a slot in a structure to be protected and a flexible weatherstrip portion protruding from the base into engagement with the edge of a door or window to be sealed, the base and weatherstrip portion being dual-extruded together to form a unitary structure, and the weatherstrip portion having partially embedded in its exposed wearing surface a series of spaced ribs of hard, low-friction, abrasion-resistant plastic material preferably also produced by multiple extrusion.

3,685,207

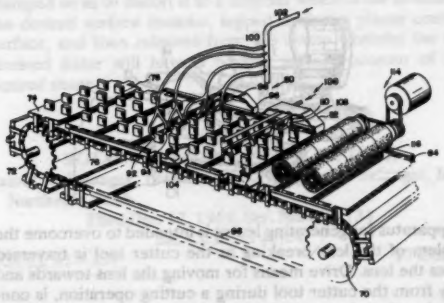
Patent Not Issued For This Number

3,685,208

APPARATUS FOR TREATING METALS

Edward S. Richter, 854 Moreland Ave. S.E., Atlanta, Ga.

Division of Ser. No. 740,948, June 28, 1968, Pat. No. 3,559,351. This application Jan. 28, 1971, Ser. No. 110,711
Int. Cl. B24c 3/04
U.S. Cl. 51—5 **2 Claims**



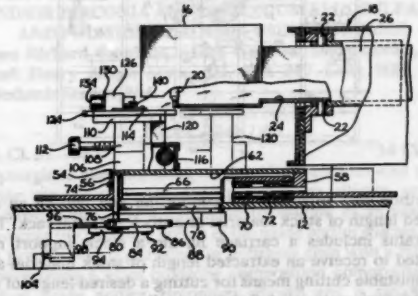
Metals are treated by directing a high pressure jet of high hardness particulate material in a fluid medium against the surface of the metal. The fluid material is comprised of small marble particles dispersed in a liquid medium such as water and in some instances including other substances, such as clay and rust inhibitors. The high pressure jets prepare the metal for plating, remove flash, markings and imperfections from the metal. The metal is then washed and buffed. The apparatus for carrying out the process includes high pressure systems for delivering the fluid mixture from nozzles at a station through which the metal is carried. A recovery system recirculates the material so that it is continuously re-used. The process and apparatus are useful for either sheet metal or individual metal parts.

3,685,209

APPARATUS FOR TRIMMING ELECTRICAL RESISTORS

Arthur H. Lambert, Los Angeles, Calif., assignor to Comco Supply, Inc., Burbank, Calif.

Filed Aug. 20, 1970, Ser. No. 65,601
Int. Cl. B24c 3/04
U.S. Cl. 51—14 **4 Claims**



An apparatus for guiding the powdered abrasive cutting nozzle upon a micro-electronic circuit board to decrease the cross sectional area of an electrical conducting strip thereon, the apparatus employing a variable speed linkage assembly to effect movement of the circuit board into association with the abrasive cutting nozzle, an electrical circuit connected through a probe assembly to measure the electrical resistance of the trimmed conducting strip upon the circuit board, the probe assembly being movable between a conducting position and a nonconducting position.

3,685,210

APPARATUS FOR LENS GENERATION

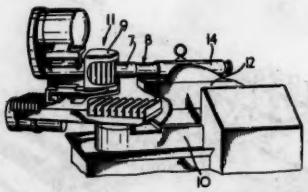
Gilbert John Bowen, 58 Browning Rd., Rugby, England

Filed Sept. 9, 1970, Ser. No. 70,770

Claims priority, application Great Britain, Oct. 16, 1969, 45575/69

Int. Cl. B24b *13/00*

U.S. Cl. 51—33 W 7 Claims



Apparatus for generating lenses is intended to overcome the problem of the lens breaking as the cutter tool is traversed across the lens. Drive means for moving the lens towards and away from the cutter tool during a cutting operation, is controlled so that, during the initial traverse of the cutter tool, the lens is backed off from the cutter. Before the return traverse the lens is moved back towards the cutter tool so that the tool removes the remaining thickness from the lens. The drive means takes the form of a double-acting piston and cylinder device including two pistons.

3,685,211

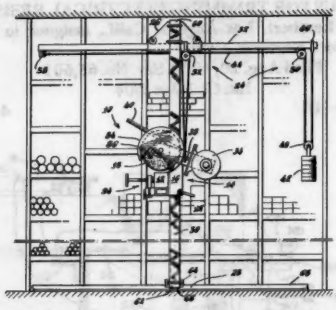
APPARATUS FOR SUPPORTING AND CUTTING AN EXTRACTED LENGTH OF STOCK MATERIAL AT A STOCK MATERIAL RACK

Jacques J. Marchand, 25 Park St., Montclair, N.J.

Filed May 26, 1970, Ser. No. 40,528

Int. Cl. B26d *7/00*; B23d *47/04*

U.S. Cl. 51—98 5 Claims



Method and apparatus for supporting and cutting an extracted length of stock material at a stock material rack. The apparatus includes a carriage having a stock support rest adapted to receive an extracted length of stock material and an adjustable cutting means for cutting a desired length of extracted stock material. A first means adjusts the carriage vertically along a defined plane parallel to the plane defined by the rack. A second means adjusts the carriage horizontally along the defined plane whereby the first and second carriage adjusting means combine to provide complete adjustability to the stock support rest and cutting means for movement to any desired rack location. Pivot means is provided for adjusting the cutting means between a cutting and non-cutting position relative to the stock support rest. Drive means actuates the cutting means when the extracted piece of stock material is properly positioned on the stock support rest.

3,685,212

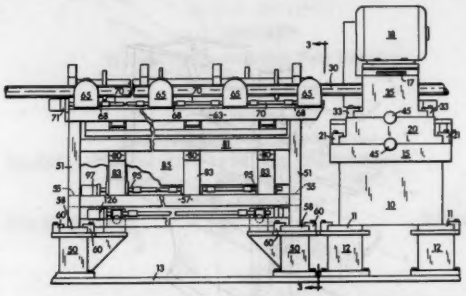
CENTERLESS GRINDING MACHINE

Robert L. Schaller, 5118 Munro Rd., Camillus, N.Y., assignor to Sunstrand-Engelberg, Inc.

Filed April 16, 1970, Ser. No. 29,031

Int. Cl. B24b *5/18*

U.S. Cl. 51—103 TF 7 Claims



The centerless grinding machine includes a grinding head in fixed position. The infeed and outfeed bar roll assemblies and the regulating wheel and bar rest assembly are movable toward and from the grinding element in the grinding head. An in-process grinding wheel guaging device is provided for continuously gauging the diameter of the wheel. As the wheel wears, during the grinding operation, the gauge signals the amount of wear to a numerical control system which effects movement of the roll assemblies, and the regulating wheel and rest assembly toward the grinding wheel to compensate for the wheel wear. The bar loading assembly may also be moved under the control of the wheel gauge.

3,685,213

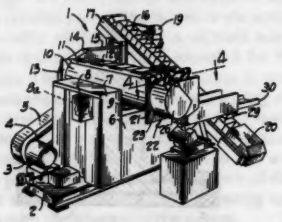
ORBITAL FINISHING SYSTEM

John F. Rampe, Cleveland Heights, Ohio, assignor to Rampe Research, Mayfield Heights, Ohio

Filed Feb. 5, 1970, Ser. No. 8,815

Int. Cl. B24b *31/06*

U.S. Cl. 51—163 10 Claims



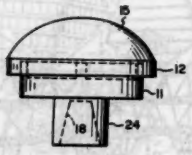
A vibratory finishing machine including a supporting frame, a processing tub, and vibratory means interposed between the frame and the tub to vibrate the tub. Spaced charging and discharging means deliver workpieces and media into one end of the tub and discharge it through an opening in the opposite end of the tub so as to provide a continuous feed finishing operation. The discharging means includes a weir which extends to an adjustable height to control the height at which workpieces and media discharge from the tub. The discharging means also includes a closure means for closing the discharge opening to retain or discharge workpieces and media. A timing control serves to cyclically actuate the closure operator at adjustable predetermined intervals of time during operation of the machine. Together these adjustable controls permit the retention time of workpieces in the tub to be controllably varied.

3,685,214

TWO PIECE LENS GRINDING LAP

George M. J. Sarofeen, Colonia Heights, Va., assignor to Vaerco, Inc., Colonial Heights, Va.

Filed Oct. 12, 1970, Ser. No. 79,978
Int. Cl. B24d 17/00
U.S. Cl. 51—209 DL 8 Claims



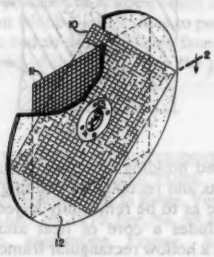
A two piece grinding lap comprising a lens surfacing member and a body member. The lens surfacing member includes depending lugs adapted to be received in corresponding detents in the body member and may be made of a non-ferrous material such as plastic. Both grinding and polishing can be carried out by using either a grinding pad or a polishing pad on the curved surface.

3,685,215

REINFORCED GRINDING WHEEL

Fred R. Bates, Mount Vernon, Wash., assignor to Pacific Grinding Wheel Company, Inc.

Filed Dec. 4, 1970, Ser. No. 95,011
Int. Cl. B24d 5/04
U.S. Cl. 51—206 NF 9 Claims



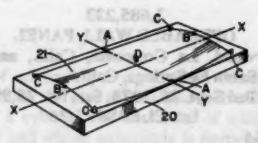
A semi-reinforced grinding wheel having square-shaped open-mesh fabric reinforcing layers which are orientated out of phase with one another.

3,685,216

SLIDER BEARING SURFACE GENERATION

Karl A. Frey, Roslindale, Mass., and Warner F. Schliffke, Omaha, Nebr., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Jan. 14, 1970, Ser. No. 2,704
Int. Cl. B24b 1/00, 37/00
U.S. Cl. 51—325 4 Claims



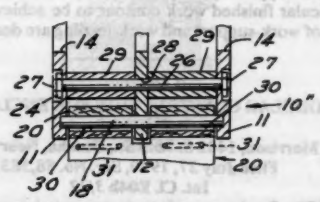
A method of generating the bearing surface on a "flying" magnetic recording head. The desired bearing surface is of compound curvature, having a significant crown along an axis parallel to the flying direction and a lesser concavity along an axis transverse to the flying direction. The bearing surface is produced by lapping an essential element of the head, henceforth called "slider" against a control surface. In a first embodiment of the method, the control surface comprises a thin sheet of glass, metal or ceramic distorted to a contour which is the inverse, or converse, of the desired shape; and the slider is lapped against the control surface using a combined lateral and cross-lateral motion, Alternatively, the slider may be clamped so as to distort it to a contour which is the inverse of the desired surface contour, lapped against a planar control surface, and then released from the clamp whereby the unstressed slider will have a bearing surface contour of the desired shape.

3,685,217

ROTARY FINISHING WHEEL OR TOOL

James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Filed Dec. 17, 1969, Ser. No. 885,734
Int. Cl. B24d 13/04
U.S. Cl. 51—337 17 Claims



Annular and co-axial plates are optionally spaced axially from and restrained in rigid assembly with one another either by a cylindrical hub-like structure, by circumferentially spaced rods, or a combination of such means, to afford a composite wheel body structure. The annular members mount multiple bearing pins in a circumferential array equidistantly outwardly of said spacer means; and a replaceable finishing flap unit is pivoted on each pin on an axis paralleing that of the wheel. In wheel bodies embodying cylindrical spacer-retainer means, such means may serve as a wheel driver hub; or it may be supplemented by annular end adapter discs at which the wheel hub receives its drive.

3,685,218

GLASS POLISHING COMPOSITIONS BASED ON ZIRCON AND/OR ZIRCONIA AND ZIRCONIUM FLUOSULFATE AND POLISHING PROCESS USING THE SAME

James Richard Gambale, Amity Gardens, Douglassville, Pa., and Henry Asaph Stone, III, Box 387 Long Hills Rd., Neshanic Station, N.J.

Filed Dec. 8, 1970, Ser. No. 96,244
Int. Cl. B24b 1/00
U.S. Cl. 51—283 14 Claims

Synergistic glass polishing compositions are provided comprising zirconium oxide and/or zirconium silicate as the polishing oxides, and a zirconium fluosulfate as an additive enhancing the polishing action of the oxide and/or silicate.

A process also is provided for polishing glass with a felt applicator using a glass polishing composition comprising zirconium oxide and/or zirconium silicate and a zirconium fluosulfate, at a pH with the range from about 3.5 to about 14.

3,685,219

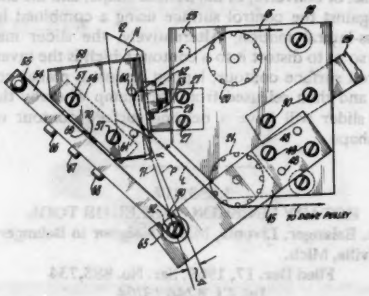
CONTOUR-ABRASION MEANS AND METHOD

Edward C. Palmenberg, Nanuet, N.Y., assignor to Chromalloy American Corporation, Orangeburg, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,067
Int. Cl. B24b 1/00, 21/10, 21/16
U.S. Cl. 51—328 21 Claims

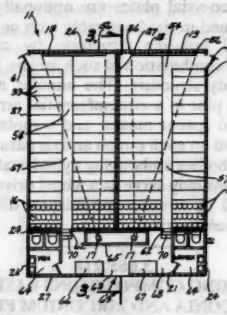
The invention comprises abrading a work surface to desired contour by using a continuously driven endless abrasive belt in

the region of passage over a thin air-film or cushion by which the belt is locally supported and shaped at a suitably contoured platen. The platen is air-permeable and is supplied with a continuous flow of pressurized air from within, being



directed at the inner surface of the belt, and over the entire region of belt support by the platen. The platen is contoured for the particular finished work contour to be achieved. Various features of work-support and work-feeding are described.

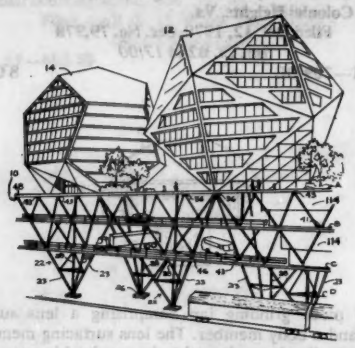
3,685,220
MODULAR CONSTRUCTION FOR ENCLOSED THEATERS
David J. Morrison, 1402 S. 78th St., Omaha, Nebr.
Filed July 27, 1970, Ser. No. 58,383
Int. Cl. E04h 3/22
U.S. Cl. 52—8 **11 Claims**



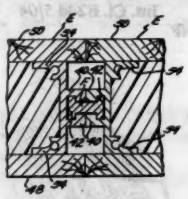
A modular construction for enclosed theaters is disclosed herein. The theaters are formed by juxtaposing a plurality of mobile modular units to form viewing compartments. Each of the mobile modular units is specially equipped to provide the theater with seats, projectors, screens and the necessary comforts of modern theaters. The mobile modules are also provided with leveling jackets at the corners thereof so that the theaters can be readily constructed on parking lots, etc. Wheels are secured to the mobile modules thereby providing the necessary mobility.

3,685,221
EXPANDABLE PLATFORM WITH BUILDING STRUCTURES THEREON
Joseph J. Mangan, 35-17 149th Place, Flushing, N.Y.
Filed Oct. 3, 1969, Ser. No. 863,472
Int. Cl. E04h 1/04
U.S. Cl. 52—80 **8 Claims**

A platform being preferably in the form of a multi-level floors which serve as cover for both parking and storage areas, and provides for rapid lateral transportation therein. The top floor or level serves as a base for the various construction forms constituting offices, housing and the like. The platform is built on large tetrahedrons anchored into virtually unusable land areas. The various constructional components are standarized so that the entire structure may be easily expanded at will with selected number of standard components.



3,685,222
PREFABRICATED BUILDING STRUCTURE
Joan Curtess, 6706 Hayvenhurst #10, Van Nuys, Calif.
Filed June 10, 1970, Ser. No. 45,090
Int. Cl. E04c 1/10
U.S. Cl. 52—90 **11 Claims**



A prefabricated building structure formed from extruded metallic elements and rectangular building members that are of such structure as to be removably keyed to said elements. Each panel includes a core of heat and sound insulating material inset in a hollow rectangular frame, either by fabrication or by injection of liquid and two rectangular panels bonded to the side surfaces of said frame and panels.

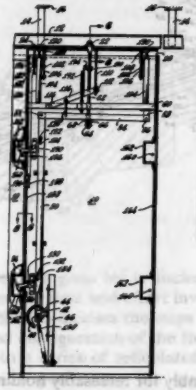
A first panel on each of said building members is adapted to be exteriorly positioned and is of a material substantially resistant to weathering conditions, with the second panel being of a suitable material to define a part of the interior surface of a building.

The building structure of the present invention formed from such elements and building members is sturdy, can withstand very substantial vertical and horizontal loads imposed thereon without damage thereto, is resistant to deteriorating warm, moist air, flame, and is not appreciably affected by the action of insects such as termites, or the like, and is lightening-proof.

3,685,223
OPERABLE WALL PANEL
John C. Sherwood, La Crescenta, Calif., assignor to Sher Walls, Inc., Santa Fe Springs, Calif.
Filed Sept. 28, 1970, Ser. No. 75,990
Int. Cl. E05d 15/26
U.S. Cl. 52—64 **15 Claims**

An operable wall panel has a header that is spring biased toward the ceiling, spaced latches along one side that are extendable through slots in the stile to lock to pins in an adjacent panel, and a roller in a ceiling track. The panel is raised and lowered along a rod that extends from the roller and through a

horizontal bar below the header. One end of such bar is pivoted to the panel and its other end is linked to a vertical side bar that operates the latches. The horizontal bar is also coupled to the header. The side bar is raised and lowered by a cam in the preferred embodiment. When the side bar is lowered, the header is retracted from the ceiling, the latches are retracted into the panel, and the horizontal bar bottoms against the lower end of the rod to facilitate upward movement of the panel so that its lower end clears the floor. When



the side bar is raised, the panel settles to the floor, the header is freed to move against the ceiling, and the latches are extended for latching engagement with an adjacent panel. At the upper end of the panel is a pin that is normally biased into the track to keep the panel from rotating while it is being moved along the track, but which is retractable to permit the panel to be swiveled on the rod so as to facilitate face-to-face stacking of panels at one end of the track when the panels are not in use.

3,685,224

METHOD OF ADVANCING A PRESTRESSED CONCRETE BRIDGING STRUCTURE

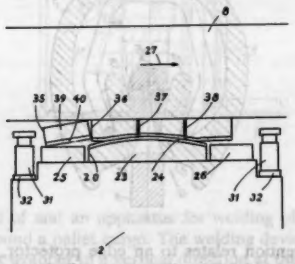
Pierre Launay, 108, Boulevard de la Reine, Versailles, France

Filed July 28, 1970, Ser. No. 58,864

Claims priority, application France, Aug. 26, 1969, 6929212

Int. Cl. E04h *14/00*; E04c *3/10*

U.S. Cl. 52—173 **1 Claim**



A method of advancing a prestressed bridging structure over a pier in which the pier is provided with a sliding surface being a part of a cylinder the concavity of which is directed toward the pier and whose generatrix is perpendicular to the vertical plane containing the bridge axis, whereby support pieces introduced between the bridging structure and the sliding surface on that side of the pier whence the structure is advancing will ride up the surface and carry the structure over the surface.

3,685,225

Patent Not Issued For This Number

3,685,226

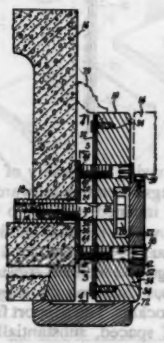
ADJUSTABLE DOOR JAMB

Stanley H. Richter, 2327 S. Rio Grande Ave., Orlando, Fla.

Filed May 5, 1970, Ser. No. 34,741

Int. Cl. E06b *1/10*

U.S. Cl. 52—217 **2 Claims**



A jamb, a metal plate attached thereto, a lag screw inserted through the jamb and plate and threadedly engaged with the end of the wall to which the jamb is adjustably attached, a metal plate against the end of the wall, and set screws threadedly engaged with the plate attached to the jamb exerting a force against the metal plate attached to the end of the wall opposing the force exerted by the lag screw on the jamb.

3,685,227

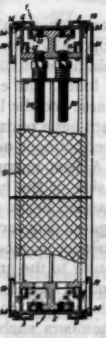
PLINTH AND/OR FRAMING ELEMENTS FOR PARTITIONS AND PARTITIONS APPLYING SUCH ELEMENTS

Jean Grisard, and Marcel A. Grisard, both of Waterloo, Belgium, assignors to Incormac S.A., Zoug, Switzerland

Filed July 3, 1969, Ser. No. 838,971

Int. Cl. E04b *2/62*, *2/74*

U.S. Cl. 52—242 **4 Claims**



Plinth and/or framing element comprising a U-shaped section the width of which is lower than, but substantially equal to the thickness of the partition, the outer face of the median wall of said U-shaped section having two L-shaped ribs.

3,685,228
BUILDING PANEL AND ASSEMBLY

Eugene E. Pauley, 45 Coral Dr., Belleville, Ill.

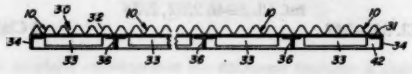
Filed Sept. 18, 1970, Ser. No. 73,387
Int. Cl. E04b 1/54
U.S. Cl. 52—506 20 Claims

A building panel having a plurality of pegs attached to a support frame, the pegs extending outwardly from one side of the frame and being inclined relative to the frame plane. A facing slab, provided with a plurality of closed end sockets in one side of the slab, arranged in the same predetermined pattern as the frame pegs and inclined substantially in the same direction as the pegs, is hung on the support frame with the pegs interfitting the sockets. The support frame includes a first set of a plurality of spaced, substantially parallel elongate structural members and a second set of a plurality of spaced, substantially parallel elongate structural members extending across and secured to the members of the first set. The pegs are attached to the structural members.

3,685,229
STRUCTURAL ELEMENT FOR USE IN THE CONSTRUCTION OF PANELS, MODULES, AND BUILDING STRUCTURES

Oliver H. Sale, Jr., 250 Colonial Homes Dr., Atlanta, Ga., and James R. Fincher, 3689 Cascades, Palmetto Hwy., Atlanta, Ga.

Filed Aug. 7, 1970, Ser. No. 61,928
Int. Cl. E04c 2/38, 2/04
U.S. Cl. 52—618 4 Claims

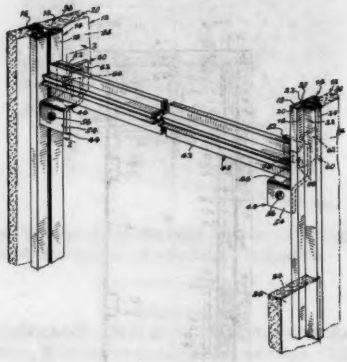


This disclosure relates to a structural element having a base sheet which carries orthogonally disposed corrugated sheets on opposite sides which aid the structural element to resist inplanar as well as normal loads. The element can be used to form panels, columns, beams and the like. A panel formed by using the structural element has a rectangular base plate and a plurality of parallel, spaced stringer members secured to one side of the base plate. A first corrugated skin member is secured to the opposite side of the base member so that its ridges and grooves are parallel to the stringer member, and a plurality of second corrugated skin sections are secured to the base plate between the stringer members so that their grooves and ridges are perpendicular to the grooves and ridges of the first corrugated skin member. The panels can be joined end to end to form plates which, in turn, can be joined along their edges using auxiliary members such as angles to produce structures with "folded plate" constructions. The panel can also be used to form a building module having two parallel, spaced panels which are secured together by a latticework which includes a plurality of diagonal brace members. The modules are used to form enclosures, buildings and the like.

3,685,230
SPACER ASSEMBLY FOR HOLDING A PAIR OF PANEL CONNECTORS IN A WALL STRUCTURE

Robert Paul Lickliter, Hamburg, and John F. Reeves, Tonawanda, both of N.Y., assignors to Flangeklamp Corporatinn, Buffalo, N.Y.

Filed March 10, 1970, Ser. No. 18,072
Int. Cl. E04c 5/18, 3/09
U.S. Cl. 52—677 6 Claims



A spacer assembly for releasably holding a pair of opposed panel connectors assembled in spaced apart relation comprising an elongated connector spanning the space between the opposed panel connectors and having opposite ends engageable against the opposed panel connectors. Interlocking means are provided adjacent the opposite ends of the connector for connecting the connector to the opposed panel connectors. Each interlocking means is comprised of a first clip having a locking head interlockable with one of the opposed panel connectors and second clip detachably interlocking the first clip to the spacing connector.

3,685,231
EDGE PROTECTOR, MOULDING OR BEADING

Werner Blose, Eisenlensweg 17, 2 Hamburg 28, Germany

Filed Dec. 9, 1968, Ser. No. 782,352
Int. Cl. E04f 19/02, 15/14
U.S. Cl. 52—716 2 Claims

This invention relates to an edge protector, moulding or beading made of deformable material for bordering the edges of structures of constant or variable thickness, which protector, moulding or beading has a carrier of semi rigid, resiliently deformable material of U-shaped cross section which is embraced by a covering material of rubber or plastics material, that portion of the covering material which is arranged on the inner faces of the arms of the carrier being formed of a softer material that the remainder of the covering material so that once the protector, moulding or beading has been applied to

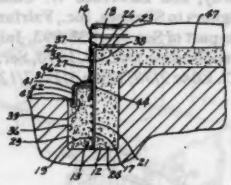
the edge, the softer material, which is in contact with the edge, will provide a very strong grip.

3,685,232

METHOD OF ERECTING A GRAIN BIN

Vincent B. Steffen, 321 E. Hamilton, New Hampton, Iowa

Filed Dec. 11, 1969, Ser. No. 873,774
Int. Cl. E04g 21/00; E04f 13/06
U.S. Cl. 52—742 3 Claims



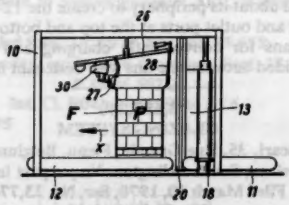
A method of erecting a grain bin is disclosed herein which substantially reduces the time and effort involved in erecting grain bins. The method comprises the steps of (1) forming a trench in the desired configuration of the foundation; (2) attaching wallsheets to a series of reticulated reinforcing and screed members; (3) positioning the members with the wallsheets attached thereto horizontally and upstandingly in the trench; and (4) pouring concrete in the trench to form the foundation. The reticulated reinforcing and screed members are of inverted L-shaped configuration and unitary construction.

3,685,233

METHOD OF WELDING SHEETS, PARTICULARLY SHRINK-ONhSHEETS WHICH HAVE BEEN WRAPPED AROUND A PALLET CARGO AND APPARATUS THEREFOR

Harry Lassig, and Anton Grosshauser, both of Hamburg-Schenefeld, Germany, assignors to Fordertechnik Hamburg Harry Lassig, Hamburg-Schenefeld, Germany

Filed June 16, 1970, Ser. No. 46,686
Int. Cl. B65b 11/20, 49/00
U.S. Cl. 53—33 7 Claims



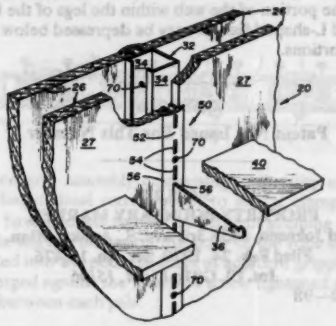
A method of and an apparatus for welding plastic sheets wrapped around a pallet cargo. The welding device for welding the sheet wrapper in a vertical direction at the rear of the pallet comprises welding jaws and clamping jaws which are opened and closed by a motor adapted to apply a predetermined clamping pressure on the sheet during welding and cooling down of the welds. The upper open end of the sheet wrapper enveloping the cargo is sealed while the pallet passes through the apparatus. Toward this purpose, the upper marginal portions of the sheet wrapper are stretched by means of a slidable claw and a rotatable retaining arm, and are welded by a welding device arranged above the center of the pallet path.

3,685,234

BRACKET STANDARD AND PARTITION MEMBER RETAINER

Nels Nelsson, 590 Patricia Lane, Des Plaines, Ill.

Filed Nov. 5, 1970, Ser. No. 87,035
Int. Cl. A47g 29/02; E04b 2/72
U.S. Cl. 52—36 7 Claims



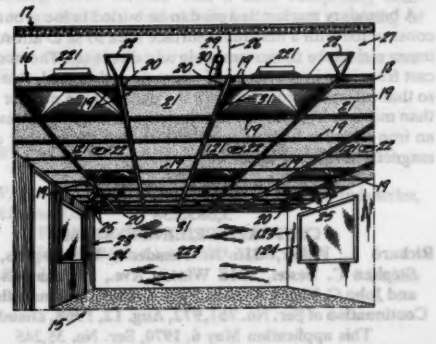
A selectively mountable and demountable wall characterized by removable stud-mounted bracket standards which hold the partition members in place against the studs, the standards fitting flush against the exterior surface of the partition members.

3,685,235

SUSPENDED CEILING SYSTEM INCLUDING A GRID NETWORK

Marshall Ira Lang, Wayne, N.J., assignor to Bajer Industries Incorporated, Passaic, N.J.

Filed Sept. 21, 1970, Ser. No. 73,806
Int. Cl. E04b 5/55
U.S. Cl. 52—39 7 Claims



A suspended ceiling system which includes a grid network for supporting a plurality of ceiling panels with this network being made up of a plurality of like grid modules. Each grid module is an elongated integrator member in the form of an inverted channel of suitable stiff material, such as aluminum. This inverted channel is defined by a cross web and a pair of transversely-spaced, depending sidewall flanges that are integral with the web and between which a selected utility unit may be mounted at any chosen location by anchoring means, such as screws or snap-in fasteners, parts of which are carried by or formed in these depending flanges, or bolts extending through the web. The bottom edges of these channel sidewall flanges carry integral outwardly-extending, panel-supporting flanges. The web has a pair of integral, transversely-spaced, upstanding and opposed, inverted L-shaped flanges with their opposed lateral edges spaced apart to provide an intervening

longitudinal access slot, the space defined by these L-shaped flanges and the web constituting an elongated track for receiving and holding nuts of anchoring bolts at any selected points. The inverted channel also may have integral with its web a second pair of such inverted L-shaped flanges located laterally outward of the first pair to house the latter with the legs of the second pair connected to the web outside of those of the first pair and in alignment with the depending channel sidewall flanges. The portion of the web within the legs of the first pair of inverted L-shaped flanges may be depressed below the web flanking portions.

3,685,236

Patent Not Issued For This Number

3,685,237

PROPERTY BOUNDARY MARKER

John David Johnson, 1435 3rd Ave. S., Anoka, Minn.

Filed Feb. 24, 1970, Ser. No. 13,476
Int. Cl. G01c *15/04, 15/06*
U.S. Cl. 52—98 8 Claims

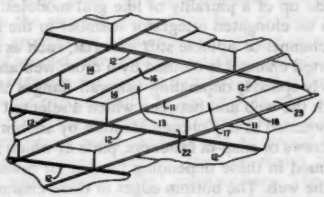
A boundary marker designed to be buried in the ground and constructed with a maximum surface area so as to afford maximum resistance to movement in any direction. The marker is cast from iron in the shape of alternate orthogonal, thin plates so that external forces fracture the plates of the marker rather than move it. The marker is adjustable in length and cast from an iron which is high in cementite so that the marker can be magnetized for easy location.

3,685,238

COFFERED CEILING SYSTEM

Richard L. Fisher, 316 N. Pasadena, Indianapolis, Ind.; Stephan C. Nestel, 1918 Winton Ave., Indianapolis, Ind., and John C. Niemi, 4330 N. Park Avenue, Indianapolis, Ind.

Continuation of Ser. No. 751,972, Aug. 12, 1968, abandoned. This application May 6, 1970, Ser. No. 35,245
Int. Cl. E04b *1/82, 5/52*
U.S. Cl. 52—145 17 Claims



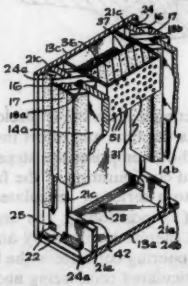
A conventional suspended ceiling grid supports coffer frames, each frame prefabricated from four sheet metal strips of identical construction formed with inwardly extending flanges at the top and bottom and an upturned flange at the inner edge of the top flange, and groove-forming flanges at a single end of each member receiving the unflanged end of another of the members, the four members of a frame being fastened together and then installed to the grid and topped by a coffer panel.

3,685,239

HERMETICALLY SEALED DOUBLE-GLAZED WINDOW UNIT AND METHOD FOR SEALING SAME

Richard H. McCurdy, and Lawrence W. Connelly, both of Fairfax, Va., assignors to Sitelines, Inc., Fairfax, Va.

Continuation-in-part of Ser. No. 838,093, July 1, 1969, abandoned. This application Oct. 19, 1970, Ser. No. 81,857
Int. Cl. E04c *2/38*; E06b *3/24, 7/12*
U.S. Cl. 52—172 23 Claims



Resilient glazing gaskets are utilized to mount spaced glass plates to inwardly directed glazing fins within a frame made up of joined elements. Continuous beads of sealant applied to the outside of the fins form an airtight seal between the gaskets and the inner surface of the frame. Beads of sealant applied between the fins to the inside of the frame where its elements are joined are connected with the continuous beads through holes provided in the fins adjacent the joints, thereby hermetically sealing the air space between the glass plates. The sealant is therefore continuous along the twelve edges of a three-dimensional rectangular box-like figure so as to completely seal the volume between the spaced glass plates. In an alternate embodiment, a gasket is used along the outer periphery of one of the glass plates. The second glass plate is mounted adjacent the fin on one side of the frame and sealant is positioned about its periphery to create the 12-sided sealing figure. Inlet and outlet ports at the top and bottom of the unit furnish means for conveniently charging and replenishing spaces provided between the fins with desiccant materials.

3,685,240

GLAZING SYSTEM

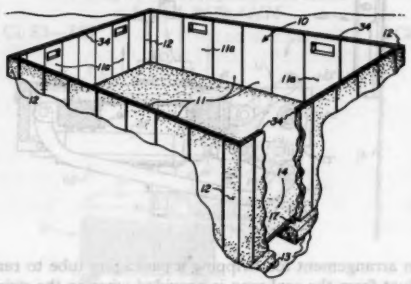
Romano Oscari, 35, Rue Grande, Flenu, Belgium, assignor to A. W. Breiner, South Arlington, Va.; a part interest

Filed March 30, 1970, Ser. No. 23,774
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 8 Claims

A glazing system and components for utilizing said system is described. The resultant glazing has the attractive appearance

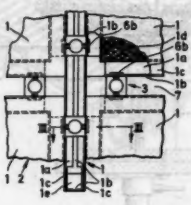
of an all-glass system, but can be rapidly installed by personnel having limited experience.

3,685,241
WALL CONSTRUCTION
Russell C. Cooper, Rt. 3, Box 217, Rochester, Minn.
Continuation of Ser. No. 840,681, July 10, 1969, abandoned. This application April 19, 1971, Ser. No. 135,502
Int. Cl. E04b *1/04*; E04c *1/10*
U.S. Cl. 52—270 **4 Claims**



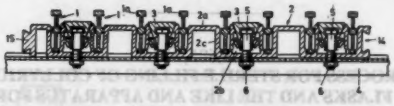
A building wall is formed by erecting on a concrete footing, masonry panels of at least one story height having corner and intermediate panels formed with a groove in the upper, lower, and one lateral edge of each panel and having a cooperating tongue member formed on the other lateral edge of the panels forming a plurality of joints sealed at the edges with a mastic material, and filled with grouting material to secure the wall to the footing, and form an integral wall. The upper portion of the wall is locked together through the use of concrete bars secured in the upper grooves to vertically extending rods used to lift the panels, the grooves then being filled with concrete to bond the panels together.

3,685,242
WALL STRUCTURES
Leon Safrata, 55 Himount Dr., Willowdale, Ontario, Canada; Horst Beifuss, Zoppoter Weg 7, 3182 Vorsfelde, Germany; Hans Bormann, Semmelweisring 39a, Germany, and Gunter Rost, Fr.-Naumann-Str. 46, both of 318 Wolfsburg, Germany, assignors to Volkswagenwert Akt., Wolfsburg, Germany
Filed Sept. 14, 1970, Ser. No. 71,678
Claims priority, application Germany, Sept. 17, 1969, P 19 46 992.2
Int. Cl. E04b *1/40*; E04c *1/16*
U.S. Cl. 52—495 **4 Claims**



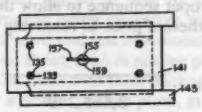
Wall structure for exhibition purposes having a panel-shaped element with a profile frame with cover layers enclosing a filler layer. The frame is closed as a square box profile with a circular longitudinal slot therein for mounting purpose.

3,685,243
LATTICE GRID ASSEMBLY
Otto Wyss, 33 Kreuzbuhlweg, Meggen, Switzerland
Filed March 19, 1971, Ser. No. 125,990
Claims priority, application Switzerland, April 2, 1970, 4873/70
Int. Cl. E04c *2/42*; F16s *3/08*
U.S. Cl. 52—665 **6 Claims**



A lattice grid assembly comprising a plurality of spaced, parallel, longitudinal rods secured to lateral clamping bars. The bars have pockets formed by resilient gripping members adapted to engage bosses on the sides of the rods when they are inserted into the pockets. Pairs of adjacent gripping members are urged against the rods by a screw tightened wedge interposed between each pair.

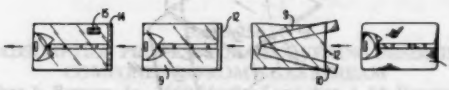
3,685,244
ENCASED STEEL BUILDING BLOCK
Robert A. Palmer, Dansville, N.Y., assignor to Korblock Corporation, Hornell, N.Y.
Filed Aug. 31, 1965, Ser. No. 484,005
Int. Cl. E04b *1/04, 1/54*
U.S. Cl. 52—592 **4 Claims**



A building block formed with a core comprising compressed or crushed old automobile bodies and a coating of concrete.

A process and apparatus for the preparation of old automobile bodies.

3,685,245
SHIRT PACKAGING AND TAGGING METHOD AND APPARATUS
Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed Sept. 14, 1970, Ser. No. 72,082
Int. Cl. B65b *51/14*; B67c *7/00, 9/12*
U.S. Cl. 53—14 **6 Claims**



A shirt packaging and tagging method and apparatus wherein shirts are inserted into thermoplastic bags and passed down an incline to a bag sealing and tagging station. The open end of the bag is sealed, a ticket is applied to the outside surface of the bag, and the shirt is then allowed to continue its movement down the incline from the sealing and tagging station.

3,685,246
Patent Not Issued For This Number

3,685,247

Patent Not Issued For This Number

ERRATUM

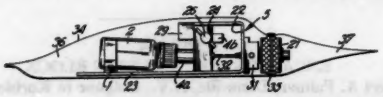
For Class 53—33 see:
Patent No. 3,685,233

3,685,248

PROCESS FOR STERILE FILLING OF COLLYRIUM FLASKS AND THE LIKE AND APPARATUS FOR CARRYING OUT SAID PROCESS

Jozef Guido Godelaine, Boomsesteeweg 413, 2610 Wilrijk, Belgium

Filed Sept. 1, 1970, Ser. No. 68,686
Claims priority, application Belgium, Nov. 10, 1969, 741,479
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 53—37 **3 Claims**



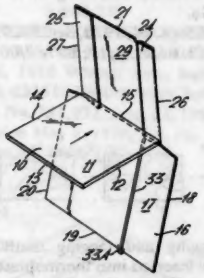
A process for sterile filling of collyrium flasks and the like wherein a flask, a stopper and a filter-holder are placed and sterilized within a closed bag and manipulated from outside the bag in the proper sequence to allow the filling of the flask and the closure thereof prior to removing said flask from said bag.

3,685,249

APPARATUS FOR WRAPPING ARTICLES OF A SHAPE OF THIN RECTANGULAR PARALLELOPIPEDS

Donald Richard Patrick Jackson, 28 Upwood Rd., Lee, London, S.E. 12, England

Division of Ser. No. 779,685, Nov. 29, 1968, Pat. No. 3,594,976. This application May 4, 1971, Ser. No. 140,164
Claims priority, application Great Britain, Dec. 1, 1967, 54,714/67
Int. Cl. B65b *11/26, 49/08*
U.S. Cl. 53—133 **11 Claims**



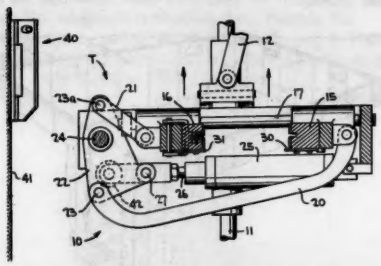
The methods and apparatus deal with wrapping thin rectangular articles in a rectangular blank and are particularly suitable for gramophone record sleeves. One feature is that side flaps are formed and folded over on to the blank to form two rectangular blank portions, one of the size of the article, the other portion of the blank having side margins which are folded around the article. Another feature is that corners of a side margin of the wrapper at one or more edges of the article are tucked in, and one side margin is folded down on to the edge of the article and on to the other side margin before that side margin is folded around the edge of the article.

3,685,250

CAM INTERRUPTED SEALING JAWS FOR PRODUCT STRIPPING

Nelson R. Henry, and Donald R. Middour, both of Decatur, Ga., assignors to The Woodman Company, Inc., Decatur, Ga.

Filed July 9, 1970, Ser. No. 53,391
Int. Cl. B65b *51/30*
U.S. Cl. 53—180 **10 Claims**



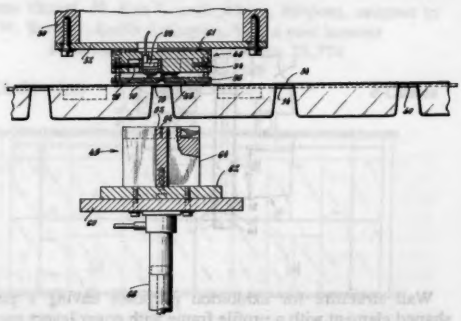
An arrangement for stripping a packaging tube to remove product from the seal area is provided wherein the stripping plates may be conveniently mounted on the sealing jaws and brought into stripping engagement by single pneumatic cylinder and interrupter cam arrangement. Specifically, a follower roller is carried by the toggle linkage and cylinder that actuates the sealing jaws and said roller engages a stationary cam mounted on the frame of the machine to interrupt the inward movement of the jaws short of sealing engagement; i.e., in the stripping position. After stripping, the follower roller passes over a sloping exit section of the dam for controlled release of the sealing jaws to the sealing and drawing out position. The cam assembly is made of a base member having a central channel for slidably receiving an elongated cam element. The cam element is cushioned by a resilient pad to absorb the shock of the engagement by the follower roller; the cam element being held on the base member by a pin and slot arrangement.

3,685,251

AUTOMATIC PACKAGING APPARATUS WITH IMPROVED MEANS FOR CUTTING AND CONTOUR TRIMMING OF PACKAGES

Reid A. Mahaffy, Montclair; James B. Dunkerley, North Haledon, and Joseph M. Psota, Hawthorne, all of N.J., assignors to Mahaffy & Harder Engineering Company, Totowa, N.J.

Filed March 26, 1970, Ser. No. 22,785
Int. Cl. B26d *1/02*; B65b *47/10, 61/10*
U.S. Cl. 53—184 **10 Claims**



An automatic packaging machine of the type adapted to form packages from continuous rolls of plastic film, especially

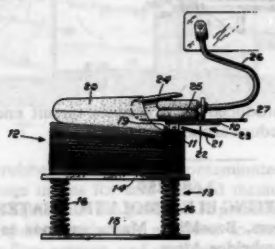
semi-rigid plastic films. The machine includes improved means and methods for cutting and contour trimming the otherwise finished packages as they move in sequence from the packaging machine, comprising heated knives mounted in one platen of a press and working against another platen of the press and working against another platen of the press arranged to cooperate with the knives.

3,685,252

HOLDING DEVICE FOR CELLOPHANE BAGS

Sally A. Wouda, White Plains, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.Y.

Filed July 16, 1970, Ser. No. 55,328
Int. Cl. B65b *43/36*
U.S. Cl. 53—189 2 Claims



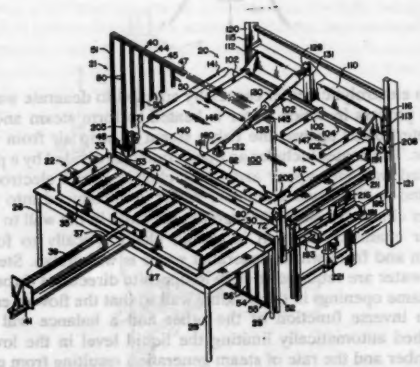
A device which holds cellophane bags for automatic and semiautomatic bagging equipment, and the device enables the dispensing and filling of single bags which are held in packets in the filling equipment.

3,685,253

WRAPPING APPARATUS

Robert E. Herrell, Wabash, Ind., and Stephen G. Moore, Tampa, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Aug. 26, 1970, Ser. No. 67,032
Int. Cl. B65b *11/02, 11/12*
U.S. Cl. 53—228 10 Claims



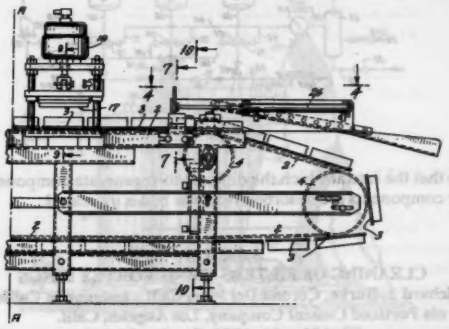
An apparatus for automatically wrapping a multi-layer stack of panels within a sheet of paper without moving the stack of panels during the major part of the wrapping operation. The apparatus has sequentially operated mechanisms to fold, glue and hold the paper during the operation.

3,685,254

MACHINE FOR AUTOMATICALLY FEEDING, COVER APPLYING, SEALING, AND TRIMMING, FILLED PACKAGES

Jonathan E. Currier, 14 Stockade Rd., West Simsbury, Conn., and Donald B. Williams, 1459 Dunbar Hills Rd., Hamden, Conn.

Filed Sept. 16, 1970, Ser. No. 72,686
Int. Cl. B65b *7/28*
U.S. Cl. 53—329 3 Claims



The machine receives open top filled packages (such as trays as one example) placed in side by side nests on an endless conveyor, means being operative to move the conveyor in alternate forward and rest movements, under the forward length of a cover sheet, such as sealing plastic, carried by a roll of the sheet. The nests with their packages are moved by the conveyor under a heated sealing plate, at which point the conveyor rests, and the sealing plate is driven downward into contact with the cover-sheet area above the packages, and the latter is sealed to the packages, as, for example, to the margins thereof. The sealing plate is then withdrawn upwardly and the packages given an upward movement and into contact with a hot wire cut-off which cuts the marginal edges of the sealed covers from the cover sheet. Then the packages are moved by the machine upwardly to a point above a series of delivery rollers, and pushing means move them so that then by gravity they leave the machine. The conveyor thus moves and rests repeatedly to act repeatedly on each side by side nest-held packages along the length of the conveyor, as to the machine elements thus specified.

3,685,255

Patent Not Issued For This Number

3,685,256

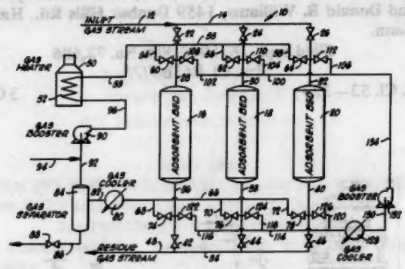
ADSORPTION PROCESS FOR RECOVERING DESIRED COMPONENTS FROM A GAS STREAM

Clem A. Barrere, Jr., 2660 Marilee Lane, Apt. A-34, Houston, Tex.

Filed March 8, 1971, Ser. No. 121,760
Int. Cl. B01d *53/04*
U.S. Cl. 55—62 7 Claims

The present invention relates to an improved adsorption process for recovering desired components from a gas stream, and more particularly, to an adsorption process for recovering desired components from a gas stream wherein one or more of the desired components is difficult to regenerate as compared to the other of the components. By the present invention, a controlled quantity of the difficult-to-regenerate component or components are continuously combined with the heated

regeneration gas stream used to regenerate a solid adsorbent containing both difficult and easy to regenerate components



so that the rate at which the difficult-to-regenerate component or components are desorbed from the bed is increased.

3,685,257

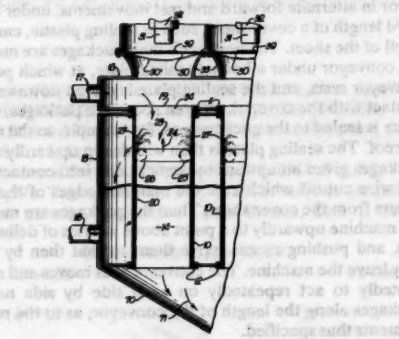
CLEANING OF FILTERS USING VORTEX RINGS

Richard J. Burke, Corona Del Mar, Calif., assignor to California Portland Cement Company, Los Angeles, Calif.

Filed May 13, 1970, Ser. No. 36,768

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **21 Claims**



The invention concerns the cleaning of filter structure by generating gas flow in a traveling vortex ring, and directing ring travel into particulate cleaning relation with that structure.

3,685,258

ELECTRONIC AIR PURIFIER

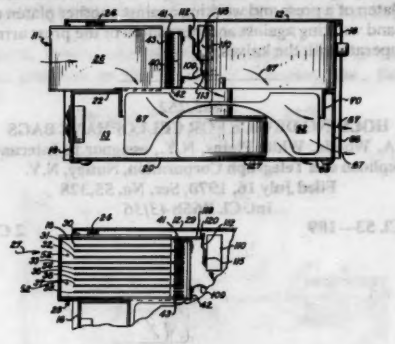
Paul Steven Kostel; William Earl Borgen, and Richard Joseph Willert, all of Yankton, S. Dak.

Filed Jan. 18, 1970, Ser. No. 107,253

Int. Cl. B03c *3/32*

U.S. Cl. 55—129 **31 Claims**

A portable electronic air purifier having a dust precipitating cell assembly of high voltage aligned plates and an ionizing wire secured at each cell side by polyacrylate polymer, the cell being manually insertable into a housing which supports a pair of spring contacts, one at each cell side, each to frictionally engage a group of plates of the same polarity when the cell is inserted to make the high voltage circuit through the cell and break the circuit when the cell is manually withdrawn for cleaning. The cell may be of numerous, closely spaced high voltage plates operated by a doubled circuit supplied at about



5,000 volts DC produced by a doubler circuit encased in plastic to further reduce arcing.

3,685,259

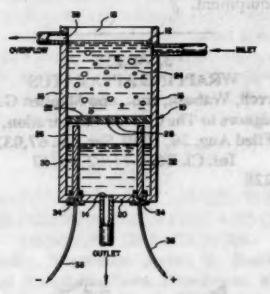
SELF-LIMITING ELECTROLYTIC HEATER

Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Cambridge, Mass.

Filed May 10, 1971, Ser. No. 141,732

Int. Cl. B01d *19/00*

U.S. Cl. 55—198 **5 Claims**



An electrolytic heater especially adapted to deaerate water by a process in which water is heated to form steam and is counterflowed against the rising steam to strip air from the water. The heater includes an open container divided by a perforated wall into upper and lower chambers and electrodes located in the lower chamber. Water is introduced into the upper chamber, passes through the openings in the wall to the lower chamber where it is heated electrolytically to form steam and from which deaerated water is withdrawn. Steam and water are required to flow in opposite directions through the same openings in the dividing wall so that the flow of each is an inverse function of the other and a balance will be reached automatically limiting the liquid level in the lower chamber and the rate of steam generation resulting from current flow between electrodes.

3,685,260

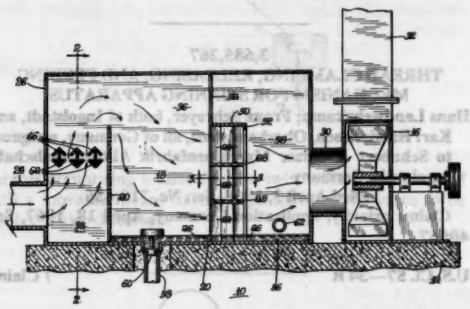
Patent Not Issued For This Number

3,685,261

WET SCRUBBER FOR CONTAMINATED GAS

Robert L. McIlvaine, Glencoe, and Roger E. Kent, Mount Prospect, both of Ill., assignors to Environeering, Inc., Skokie, Ill.

Filed Feb. 16, 1971, Ser. No. 115,481
Int. Cl. B01d 47/10
U.S. Cl. 55—240 6 Claims



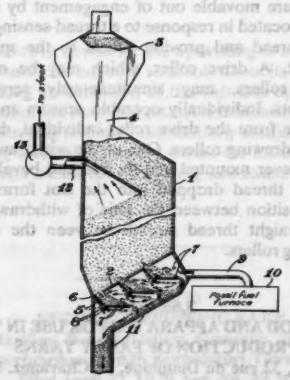
Wet scrubber apparatus for contaminated gas comprising flow passage means for said gas and means for introducing scrubbing liquid into the gas flow. A plurality of spaced-apart parallel liquid troughs are provided to extend transversely across the flow passage, and each of the troughs is concave in cross section for holding liquid. The underside of each trough defines a deflecting wall portion for a venturilike, convergent-divergent gas passage and a cover is spaced above each trough having an upwardly concave cross section with an upper surface also defining a wall portion of a venturilike gas passage. Adjacent pairs of troughs and their covers define convergent-divergent flow passages therebetween having minimum area throat sections adjacent the space between a trough and its cover. Liquid is introduced in the throat section from the trough into the high velocity gas flow by venturi suction.

3,685,262

SELF-LEVELING GRATELESS STACK GAS SCRUBBER

Leonard J. Kressley, 1708 Brenner, Saginaw, Mich.

Filed May 25, 1970, Ser. No. 40,255
Int. Cl. B01d 53/08
U.S. Cl. 55—390 2 Claims



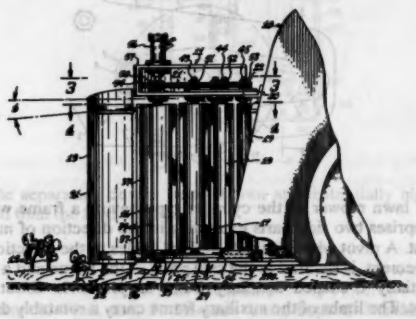
A counter-current solid-gas scrubber for the removal of SO_2 and other undesirable components from stack gas has been invented. The construction of the chamber allows self-leveling of the solids and continuous flow of particulate solids and gases without grates or agitation. The chamber has a plate on the inside which extends downwardly such that a space is formed below the plate. The plate has a gas exit formed by the space below.

3,685,263

DEVICE FOR HARVESTING RANDOMLY GROWN PLANTS

Benjamin O. Kappelman, 1042 E. Campus, Tempe, Ariz., and Marion I. Vance, Rt. 2, Box 550, Kyrene Dr., Tempe, Ariz.

Division of Ser. No. 39,727, May 22, 1970. This application Dec. 3, 1971, Ser. No. 204,490
Int. Cl. A01d 45/08
U.S. Cl. 56—1 2 Claims



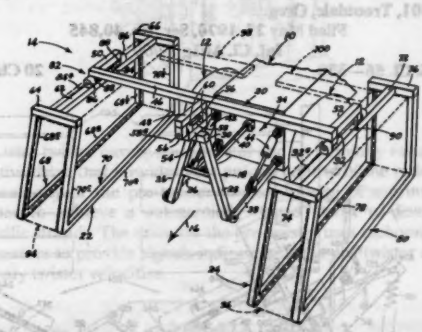
A method of harvesting stalk-like plants wherein the plants are retained in substantially their upright growing position comprising the steps of converging the plants together, intertwining the tops of the plants, cutting the stalks of some of the converged intertwined plants, and feeding the intertwined cut and uncut stalks through a harvester.

3,685,264

ARTICULATED FRAME FOR DOUBLE ROW AGRICULTURAL HARVESTER

Eugene G. Littau, 942 S. Fir St., Salem, Oreg.

Filed Dec. 21, 1970, Ser. No. 99,777
Int. Cl. A01d 67/00
U.S. Cl. 56—209 5 Claims



A dual-row agricultural row crop harvester including a floating articulated frame structure for carrying harvesting apparatus, and for accommodating irregularities in row-spacing and field terrain as the harvester travels over a field. The articulated structure includes: a vertically shiftable subframe mounted on an end of the main frame in a vehicle, such as a tractor; a laterally extending elongated rock frame pivoted to the subframe for rocking about a rock axis generally paralleling the travel direction of the vehicle; and on each end of the rock frame, a depending, swingable outrigger frame mounted for swinging about an axis substantially paralleling the rock axis.

3,685,265

CUTTER CYLINDER LAWN MOWER IN WHICH THE CUTTER CYLINDER IS ARRANGED SO AS TO BE SELF-ENERGIZING

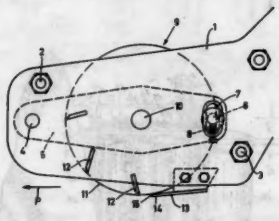
Alexandre Horowitz, Eindhoven, and Bernard Joseph Beusink, Oerle, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,499

Claims priority, application Netherlands, Sept. 26, 1969, 6914592

Int. Cl. A01d *55/20*

U.S. Cl. 56—249 4 Claims



A lawn mower of the cylinder type having a frame which comprises two side parts extending in the direction of movement. A pivot which extends at right angles to the direction of movement, is secured in the side parts of the frame and a substantially U-shaped auxiliary frame is pivotable about the pivot. The limbs of the auxiliary frame carry a rotatably drivable cutter cylinder which is spaced from the pivot. The cylinder blades cooperate with a ledger blade secured in the frame. The limbs of the auxiliary frame extend from the pivot in a direction opposite to the direction of movement. The level of the pivot is adjustable so that during the cutting operation the cutting resistance of the herbage to be cut gives rise to a tangential force which acts on the cutting edges of the cylinder blades and creates a couple which produces a torque which causes the auxiliary frame to tend to pivot about the pivot in a clockwise direction, with the result that during the cutting operation an increased pressure of engagement is produced between the cutting edges of the cooperating blades.

3,685,266

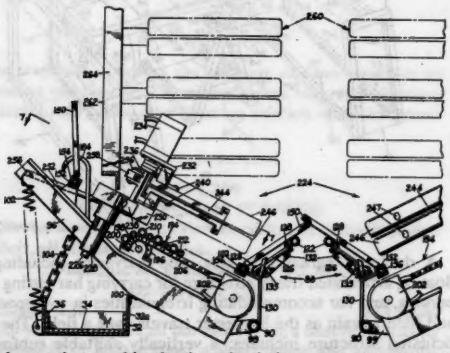
HARVESTING MACHINE

Donald R. Mohn, and Herbert D. Mohn, both of Rt. 3, Box 401, Troutdale, Oreg.

Filed May 27, 1970, Ser. No. 40,845

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 20 Claims



A harvesting machine having wheeled support and arranged to move in straddling relation along a row of vines. The center of the machine for receiving the row of vines is defined by a pair of rub bars, and flexible fingers in continuous relation are disposed in opposed relation for encompassing the stems of vines to receive crop removed from the vines by shaker mechanism. Laterally movable conveyors are provided for receiving the crop from the flexible fingers and such conveyors move the crop onto longitudinally movable conveyors. Forced air means are provided in connection with the laterally movable conveyor to blow out foreign particles. The pickup finger mechanism has travelling support on the machine so as to be driven in reverse at the same speed that the machine is travelling forward so that the fingers do not slide past the vines. Means are provided for regulating the speed of the shaker mechanism as well as the angular disposition thereof and the length of travel of the shakers.

3,685,267

THREAD CLAMPING, RELEASING, AND FEEDING MECHANISM FOR SPINNING APPARATUS

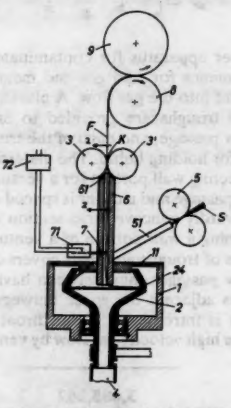
Hans Landwehrkamp; Franz Schreyer, both of Ingolstadt, and Karl Handschuch, Oberhaunstadt, all of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed April 3, 1968, Ser. No. 718,436

Claims priority, application Germany, April 18, 1967, Sch 40567

Int. Cl. D01h *1/12, 13/16, 15/00*

U.S. Cl. 57—34 R 7 Claims



Rollers for drawing spun thread from spinning apparatus are located closely adjacent to the apparatus outlet. The mouth of an outlet tube may be shaped to terminate close to the nip of the withdrawing rollers and may be flared longitudinally of the roller axes. The withdrawing rollers are normally biased together and are movable out of engagement by a solenoid plunger reciprocated in response to a thread-sensing device to release the thread and provide access to the spinning apparatus outlet. A drive roller, which may be one of the withdrawing rollers, may simultaneously serve several spinning outlets. Individually operable sensors and plungers may disengage from the drive roller individual, drive-roller-engaging withdrawing rollers. One of the withdrawing rollers may be cantilever mounted and its free end beveled to feed automatically thread dropped into the slot formed by the bevel to a position between the pair of withdrawing rollers forming a straight thread stretch between the outlet and thread winding rollers.

3,685,268

METHOD AND APPARATUS FOR USE IN THE PRODUCTION OF FANCY YARNS

Pierre Seguin, 32 rue du Dauphine, 38 Chavanoz, France, assignor to Moulinage Et Retorderie De Chavanoz, Chavanoz, France

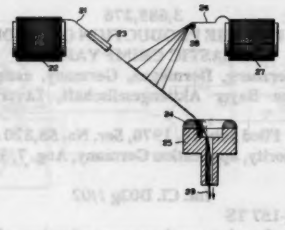
Filed May 8, 1970, Ser. No. 35,651

Int. Cl. D01h *7/92, 13/10;* D02g *3/34*

U.S. Cl. 57—34 R 10 Claims

A process for preparing fancy yarns utilizing a false twist assembly comprising feeding one yarn at a rate in excess with

reference to a second yarn and subsequently contacting both of said yarns with a reciprocating frictional force. An apparatus comprising a false friction twist assembly associated with a movable means having a passage for the yarns to be treated is also disclosed.



3,685,269

DOUBLE-TWIST SPINDLE DEVICE

Carlos Matas-Gabalda, Le Grand Duc B107, Valence, France

Filed Dec. 19, 1969, Ser. No. 886,500

Int. Cl. D01h *1/10, 7/86*

U.S. Cl. 57—58.83 **4 Claims**

A double-twist device for the uptwisting of a yarn which includes a frusto-conical bowl rotatable about its axis, a tube extending along an extension of the axis and opening into the conical wall of the bowl and rotatable therewith, a hollow yarn package-carrying assembly substantially coaxial with the bowl and having associated thereby means for locking the twist in said yarn and means for preventing said assembly from rotating.

3,685,270

SYSTEM OF SPINNING YARN

Gerhard Bartling, Burgstall/Murr, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

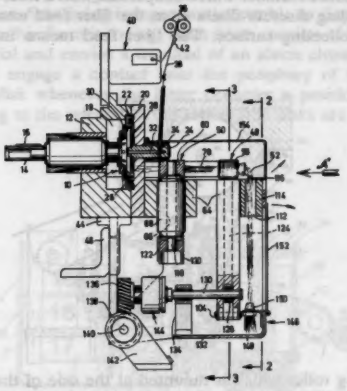
Filed April 27, 1970, Ser. No. 32,205

Claims priority, application Germany, May 5, 1969, P 19 22 876.3

Int. Cl. D01h *1/12, 7/00, 13/26*

U.S. Cl. 57—58.95 **6 Claims**

In yarn spinning apparatus fiber feed and separating system the feed mechanism comprises a pair of rollers or tapes for drawing the fiber, the separating mechanism comprises a roller and at least a counter roller, the roller and counter roller



of the separating device being driven at substantially higher speed than the feed mechanism.

3,685,271

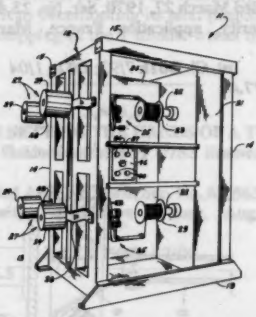
WIRE TWISTER

Charles A. Wall, and F. Norman Lutz, both of Northfield, Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed May 14, 1971, Ser. No. 143,416

Int. Cl. D07b *3/08*

U.S. Cl. 57—68 **6 Claims**



A wire twister having a pre-twister and an infinitely variable positive drive that provides very precise control of the ratio of the velocity of the pre-twister to the velocity of a primary twister to achieve a substantially "dead" twist of ferrous metallic strands. The drive for the pre-twister uses tachometer generators to provide signals indicative of the pre-twister and primary twister velocities.

3,685,272

TEXTILE SPINNING MACHINES

Robert Greenwood, Whalley, near Blackburn, and John Michael Shepherd, Ilkley, both of England, assignors to T.M.M. (Research) Limited, Oldham, Lancashire, England

Filed July 8, 1970, Ser. No. 53,246

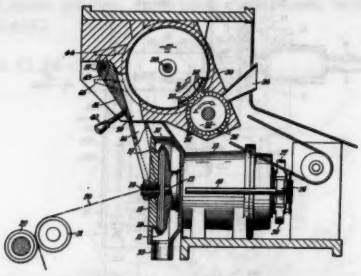
Claims priority, application Great Britain, July 8, 1969, 34,329/69

Int. Cl. D01h *1/12, 13/26, 7/00*

U.S. Cl. 57—58.95 **12 Claims**

An open-end textile spinning machine comprising a spinning rotor formed with an interior fiber collecting surface to which discrete textile fibers are fed by a fiber feed means.

The fibers in the fiber collecting surface are twisted into an end of a yarn which is withdrawn and taken up on a wind-up device. The forwardly facing open-end of the rotor is closed by a closure member which cooperates with a fiber inlet duct for feeding discrete fibers from the fiber feed means to the fiber collecting surface. The fiber feed means includes an



opening roller which is mounted at the side of the rotor for opening fibers taken from a supply and feeding them to the fiber inlet duct which forms part of a straight passage connected between the periphery of the opening roller and the vicinity of the fiber collecting surface, the length of the passage lying in a plane which intersects the axis of the opening roller at right angles.

3,685,273

METHOD AND APPARATUS FOR FALSE TWISTING TEXTILE YARNS AND PRODUCT OBTAINED THEREBY

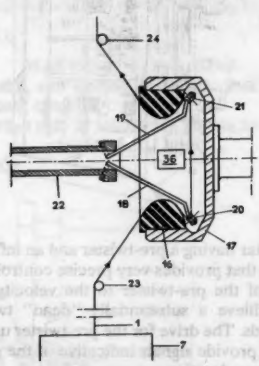
Jacques Neveux, Riorges, France, assignor to Moulinage et Retroderie de, Chavanoz (Isere), France

Filed March 27, 1970, Ser. No. 23,418

Claims priority, application France, March 28, 1969, 6909520

Int. Cl. D01h *7/92*; D02g *1/04*

U.S. Cl. 57—77.4 **8 Claims**



This invention concerns a process and device for the production of a new textured thread with open structure wherein thread of thermoplastic material in a substantially plastic state is subjected to at least two directly consecutive false twisting operations either in the same or opposite directions. The invention also concerns the product obtained thereby.

3,685,274

Patent Not Issued For This Number

3,685,275

Patent Not Issued For This Number

3,685,276

PROCESS FOR THE PRODUCTION OF MODERATELY ELASTIC CRIMP YARNS

Herbert Scherzberg, Dormagen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1970, Ser. No. 58,820

Claims priority, application Germany, Aug. 7, 1969, P 19 40 183.3

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS **7 Claims**

A process for the continuous production of moderately elastic crimp yarn from unstretched synthetic filaments by false-twist crimping, wherein the unstretched synthetic filaments are initially fully stretched under heat with a slight false-twist, after which they are subjected in the same operation to false-twist crimping under heat in the opposite direction and wound up under relaxation. Stretching is carried out at stretching ratios of from 1:3 to 1:6 and at temperatures of from 80° to 180° C.

3,685,277

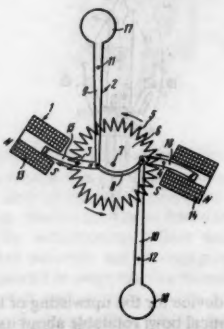
ESCAPEMENT DRIVE FOR COUNTING MECHANISMS

Feodosy Mikhailovich Fedchenko, Solnechnogorsky raion, poselok Mendeleeveo, 20, kv. 8, Moskovaskaya Oblast, U.S.S.R.

Filed Dec. 16, 1970, Ser. No. 98,545

Int. Cl. G04c *3/02*

U.S. Cl. 58—23 D **2 Claims**



An escapement drive for counting mechanisms, in which the pin pallet fork includes a pair of similar pivotally interconnected arms carrying, on the respective extremities thereof, facing the escape wheel, magnet members adapted to cooperate with the coils of an electromagnetic system. These arms are mounted for pivotal movement about respective axes equally spaced from the center of the escape wheel, so that the pallet pins of the arms are positioned to receive therebetween those of the teeth of the escape wheel, which lie on a diameter thereof, adjoining a line perpendicular to the arms.

3,685,278

CLOCK SYSTEM

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

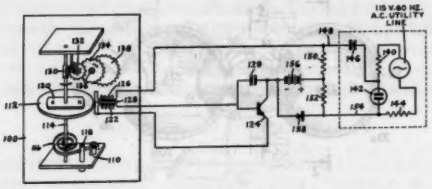
Continuation-in-part of Ser. No. 866,322, Oct. 14, 1969. This application June 12, 1970, Ser. No. 45,609

Int. Cl. G04c *13/04*

U.S. Cl. 58—24 **21 Claims**

A clock for use either with a source of alternating current of uniform frequency or a rechargeable power source. The clock

is synchronized with the uniform frequency of the alternating current and has an internal, electro-mechanical timing standard. In some embodiments, timing pulses produced by the clock are distributed to slave clocks to activate stepper motors which advance each slave clock a predetermined discrete



step. In other embodiments each slave clock includes a trigger circuit which momentarily connects a direct current power source across slave clock's stepper motor on receipt of a timing pulse, and low power rectified current is fed to this source between the pulses.

3,685,279

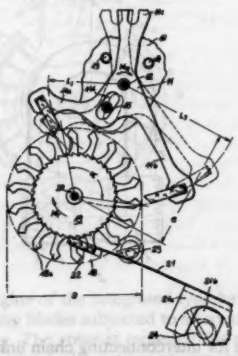
CONTINUOUS SWITCHING DEVICE FOR THE GEAR MECHANISM OF AN ELECTRIC WRIST WATCH

Gunther Scholz, Schramberg, Germany, assignor to Firma Gebruder Ivnghans G.m.b.H., Schramberg, Germany

Continuation-in-part of Ser. No. 875,646, Nov. 12, 1969, Pat. No. 3,611,707. This application July 15, 1971, Ser. No. 162,932

Int. Cl. G04c 3/04

U.S. Cl. 58—28 D **3 Claims**



A continuous switching or incremental advancing device for the gear mechanism of an electric wrist watch having a preferably electromagnetically driven balance and a switch armature driven by the balance. The switching device is provided with a long input arm and a short output arm and with a ratchet wheel driven by the switch armature.

3,685,280

MANUAL SETTING MECHANISM FOR DIGITAL ALARM CLOCK

Wolfgang Fehrenbacher, St. Georgen, Black Forest, Germany, assignor to KUNDO Kieninger & Obergfell Fabrik fur Technische Laufwerke und Apparate, St. Georgen i/Black Forest, Germany

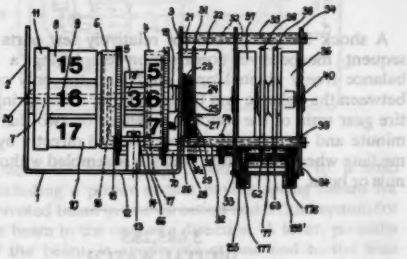
Filed June 10, 1971, Ser. No. 15,187

Claims priority, application Germany, June 11, 1970, P 20 28 679.1

Int. Cl. G04c 21/00, 21/16

U.S. Cl. 58—38 **20 Claims**

An alarm clock with coaxial digit wheels for 1-minute, 10-minute and hour indications has a pair of contact-carrying disks, rotatable about the same axis, mechanically coupled with the 1-minute wheel and with the hour wheel, respectively, for entrainment thereby. Each disk confronts an associated selector drum bearing minute and hour indications, respectively, these disks being independently settable to display the time when the alarm is to ring. Each drum consists of insulating material and carries a terminal of an alarm circuit positioned to engage a contact near the periphery of the associated disk whenever the latter occupies a position corresponding to the selected drum setting; the disks are always



conductively interconnected, by a contact spring on one disk engaging a metallic track on the other disk, so that the alarm circuit is completed when both disks occupy their preselected positions. To set the time, the disks are independently steppable by toothed actuators manually reciprocable in a slotted guide plate; a swingable detent interposed between the two lower order digit wheels prevents the resiliently indexable 10-minute wheel from overshooting its next position in response to a too rapid stepping of the 1-minute wheel through the associated disk.

3,685,281

MEANS FOR SETTING THE HANDS OF A TIMEPIECE

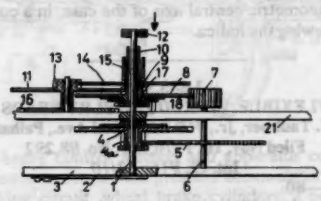
Rolf Charrier, Holderlinstrasse 7, D783 Emmendingen, Germany

Filed Aug. 10, 1970, Ser. No. 62,563

Claims priority, application France, Aug. 12, 1969, 6927676

Int. Cl. G04b 27/00

U.S. Cl. 58—85.5 **5 Claims**



The invention relates to a device for the setting of the hand of a timepiece, which is equipped with sweep second means, in particular, for use in connection with car clocks and like timepieces, in which a knob for the hand-setting operation is centrally disposed of and passes with an operational part through the crystal of said clock, whereby said knob when depressed in the direction of said crystal causes coupling with a certain element carrying a hand, such as the second hand.

3,685,282

WATCH ESCAPEMENT MECHANISM

Bruce A. Kock, 6017 Ocean View Dr., Oakland, Calif.

Division of Ser. No. 726,347, May 3, 1968, Pat. No. 3,613,353.
This application June 29, 1970, Ser. No. 50,745
Int. Cl. G04b *15/00*
U.S. Cl. 58—118 **4 Claims**

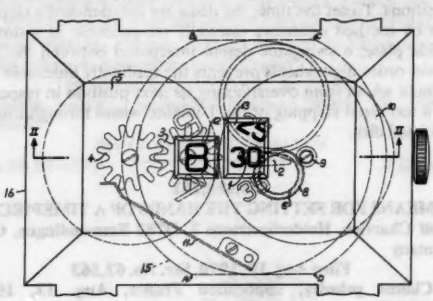
A shock resistant watch of relatively few parts and consequent inexpensive construction employing a dumbbell balance freely pivoted on a staff with the only connection between the balance and the staff being a leaf spring. The entire gear train of the watch is arranged on two shafts and the minute and hour hands are both driven directly by an intermediate wheel. The entire watch is assembled without screws, nuts or bolts.

3,685,283

DIGITAL WATCH

Joseph Bamat, 8 Beranges, La Tour de Peilz, Switzerland

Filed Nov. 13, 1970, Ser. No. 89,423
Int. Cl. G04b *15/00*
U.S. Cl. 58—126 A **9 Claims**



A timepiece includes a pair of rotatable discs carrying respectively hour and minute indicia on one surface adjacent their peripheries. The indicia are arranged to pass, on rotation of the discs, adjacent the geometric central axis of the case of the timepiece. A window is formed at a position corresponding to the geometric central axis of the case, in a cover of the case, for viewing the indica.

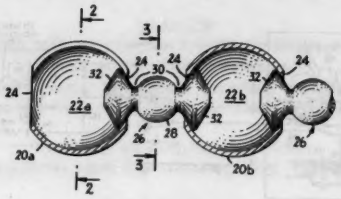
3,685,284

FLEXIBLE, LINKED JEWELRY BEADS

Valentine J. Taubner, Jr., 960 Edgewood Ave., Pelham, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,292
Int. Cl. F16g *13/10*
U.S. Cl. 59—80 **7 Claims**

Flexible series of linked jewelry beads include a plurality of large hollow bead members which are joined together by smaller shaped spacer links. The bead members have diametrally opposed holes which have a diameter of about 30 to 50 percent of the maximum diameter of the bead members. The spacer links include a central decorative spacer portion and a pair of enlarged head portions on opposite sides of the spacer portion which engage, through the holes, the inside surface of the bead members. The head portions are each joined to the spacer portion by a neck portion having a diameter of about 40 to 60 percent of the diameter of the spacer portion, thus making the spacer portion distinct. The beads are automatically manufactured, spaced and connected by forming a continuous series of joined spacer links from a tubular element, thereafter forming the large bead members around the spacer links, and then separating the spacer links and the large beads into a uniform series of large beads and smaller distinct spacer shapes.

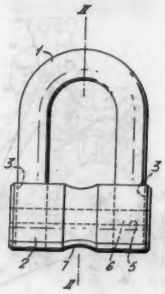


3,685,285

SHACKLES OR CLEVISES FOR CHAINS OR THE LIKE

Tor W. Spilhaug, 3790 Helle, Norway

Filed July 7, 1970, Ser. No. 52,840
Claims priority, application Norway, July 8, 1969, 2861/69
Int. Cl. F16g *15/04*
U.S. Cl. 59—86 **7 Claims**



A shackle for interconnecting chain links comprising an essentially U-shaped member and a cross or tie member receiving the free ends of the legs of the U-shaped member the cross member having a base therein extending in a direction transversely to the direction of the legs of the U-shaped member. A cylindersegment recess in each of the legs of the U-shaped member, is also provided the axis of which recess coincides with the axis of the transverse bore in the cross member. A pin extending in tight fit in the transverse bore in the cross member is also provided in engagement with the recess in the legs of the U-shaped member.

3,685,286

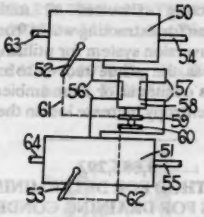
FLUID CONTROL VALVE

Alwyne Lee, 47 Bushby's Lane, Formby, England

Filed March 9, 1971, Ser. No. 122,479
Claims priority, application Great Britain, Oct. 20, 1970, 50,155/70
Int. Cl. B62d *11/00*
U.S. Cl. 60—53 R **6 Claims**

A fluid control valve has a pair of spool closure members which are slidable in unison to control flow between associated pairs of ports in response to relative movement

between a pair of control elements on the valve. The relative movement causes axial displacement of actuators which engage an abutment secured to the spools, the abutment being biased into contact with the actuators.

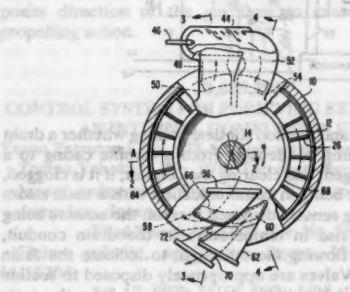


3,685,287

RE-ENTRY TYPE INTEGRATED GAS TURBINE ENGINE AND METHOD OF OPERATION

James L. Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Dec. 8, 1970, Ser. No. 96,184
Int. Cl. F02c 3/04
U.S. Cl. 60—39.02 15 Claims



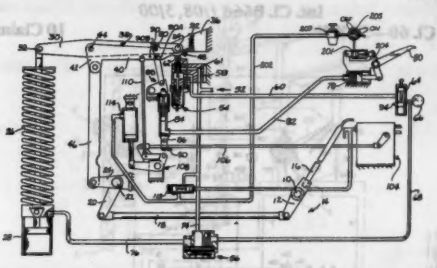
A gas turbine engine of the integrated type having a single rotor with all working blades subjected to alternate periods of cooling and heating. The rotor is mounted for rotation in a casing and performs the dual functions of compressing primary air and driving a turbine shaft in response to the expansion of combustion gases. The rotor includes two annular channels for receiving the working blades therein in an equally spaced manner. The annular channels and blades define a dual symmetrical series of pockets. The casing includes flush ports which are formed generally adjacent the inlet and exhaust ports. The flush ports cooperate with the inlet ports to purge carry-over gases remaining in the rotor pockets after exhaustion. The flushed pockets cooperate with surrounding annular channels defined by the casing to perform reentry compression on the primary air introduced into the casing annular channels and flushed pockets through inlet ports in the casing. Approximately mid-way between the inlet and exhaust ports, the casing annular channels lead into a combustion chamber into which the compressed primary air is directed. In the combustion chamber, the compressed primary air is mixed with fuel and ignited to form the products of combustion. The products of combustion expand into the casing annular channels and flushed pockets in the direction of the exhaust ports to effect the turbine shaft drive. Sealing blocks are provided in the casing annular channels to properly direct the compressed primary air into the combustion chamber and the expanding exhaust gases out the exhaust ports.

3,685,288

REMOTE CONTROLLED POWER BRAKE

Richard N. Cordrey, Middleton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Aug. 13, 1970, Ser. No. 63,403
Int. Cl. F15b 7/00
U.S. Cl. 60—54.5 R 11 Claims



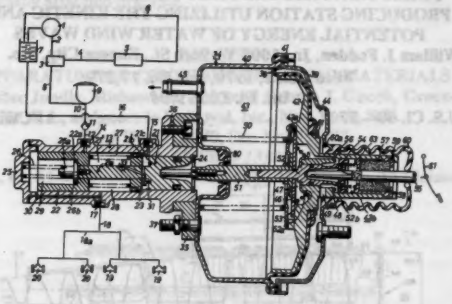
Arrangement for amplifying power applied to a load member including a power system having spring means for moving a pivoted beam in one direction and a fluid system for moving the beam in the opposite direction. A lever, pivotally carried by the beam, is connected at one end to the load member. Manual control means are arranged to move the other end of the lever, which movement is effective to vary the pressure in the fluid system and thereby control movement of the pivoted lever.

3,685,289

METHOD FOR CONTROL OF A POWER BRAKE AND APPARATUS EMBODYING SAID METHOD

Uichiro Kobashi, 2-chome, Asahi-machi; Shigeo Aiki, 1,2-chome, Asahi-machi, and Hirai Kariya, 1, Toyota-cho, all of Toyota, Japan

Filed Aug. 7, 1970, Ser. No. 61,931
Claims priority, application Japan, Aug. 10, 1969, 44/63199
Int. Cl. F15b 7/00, 15/18, 13/14
U.S. Cl. 60—54.5 P 12 Claims

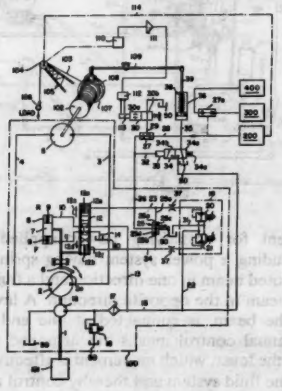


Power brake control method and apparatus comprising a fluid pressure source, a fluid pressure accumulator, a pressure fluid braking circuit, wheel brake cylinders, a power brake control valve means interposed within the braking circuit to connect the pressure source to the wheel brake cylinders when operated by initial stepping force on the brake pedal, said control valve means normally preventing the connection between the pressure source and the wheel cylinders, and a brake booster connected to the control valve and operated by the counter force of fluid pressure within said control valve means reaching a predetermined value, whereby less stepping force on the brake pedal is required, quicker response in braking is obtainable, and sufficient braking force is exercised even though said accumulator fails to supply fluid at sufficient pressure.

3,685,290
OVERLOAD SYSTEM FOR A HYDROSTATIC-DRIVE APPARATUS

Alfred Krusche, Grossostheim, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed March 15, 1971, Ser. No. 124,157
Claims priority, application Germany, April 10, 1970, P 20 17 272.9
Int. Cl. B66d 1/08, 5/00
U.S. Cl. 60—53 WW 10 Claims

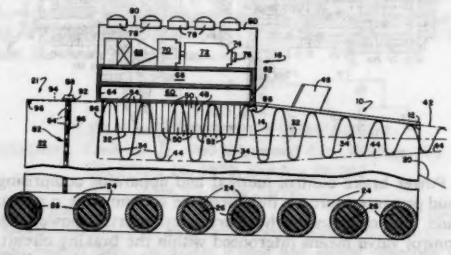


An overload safety system for a hydrostatically driven crane in which a valve assembly applies pilot fluid to a fluid-control main station which, in turn, shifts the hydrostatic drive out of its neutral position corresponding to the displacement of the control valve member. A reversing (changeover) valve connects the lines to opposite sides of the main valve with an electrically operated relief valve, the latter being actuated by an electrical signal on overload to depressurize the pilot line and apply a brake to the power member of the crane.

3,685,291
POLLUTION FREE ELECTRIC POWER AND WATER PRODUCING STATION UTILIZING THE KINETIC AND POTENTIAL ENERGY OF WATER WIND WAVES

William J. Fadden, Jr., 1005 W. 96th St., Kansas City, Mo.

Filed Oct. 1, 1970, Ser. No. 77,279
Int. Cl. E02b 9/08
U.S. Cl. 60—57 T 11 Claims

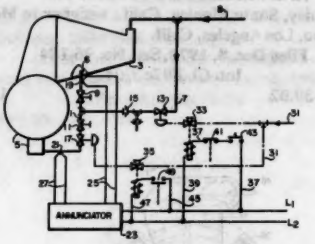


An electric power station producing fresh water as a by-product by a dehumidification process, utilizing the kinetic and potential energy of water wind waves common to large bodies of water, comprising a wave energy converter including a reception channel and an automatically adjustable standing wave basin, which augments the inherent potential energy of the waves by converting extant kinetic energy therein into potential energy, a wave energy extraction system comprising a plurality of vertical chambers having open bottom ends located approximately coincident with the theoretical wave nodal line and having upper ends, check valved to admit ambient air as the water level therein descends, and to allow to be discharged therefrom as the water level therein rises, an intake manifold admitting ambient air to the chambers, an exhaust manifold for collecting exhausted air under pressure, a refrigerant coil system for extracting water from the exhausted air, and a power conversion system for utilizing the exhausted air under pressure as the prime mover to create electrical energy. The process occurs at or near ambient temperature, thereby minimizing entropy increase loss in the entire system.

3,685,292
SYSTEM AND METHOD FOR DETERMINING WHETHER DRAIN CONDUITS FOR DRAINING CONDENSATE FROM THE TURBINE CASING ARE CLOGGED AND CLEARING THE CONDUITS IF THEY ARE

Ralph D. Brown, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 19, 1971, Ser. No. 126,188
Int. Cl. F01d 25/32; F01b 25/16
U.S. Cl. 60—105 12 Claims

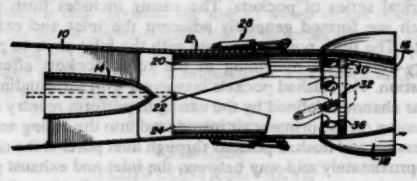


A drain system and method for determining whether a drain conduit for draining condensate from a turbine casing to a condenser is clogged, and clearing the conduit, if it is clogged, the drain conduit being in communication with a main steam supply and having sensors disposed therein, the sensors being responsive to a rise in temperature in the drain conduit, caused by steam flowing therethrough, to indicate the drain conduit is clear. Valves are appropriately disposed to section off the drain conduit, so that steam pressure from the main supply can be imposed on any portion thereof found to be clogged, to unclog it.

3,685,293
EXHAUST CONTROL FOR ENGINES

Herbert C. Shipman, 935 E. Normae, Springfield, Mo.

Filed May 13, 1970, Ser. No. 36,902
Int. Cl. F02k 1/10, 1/20
U.S. Cl. 60—229 10 Claims



Exhaust gases discharged from a jet engine are conducted through an exhaust control tube mounting funnel blades displaceable from an inactive position to a passage converging position to increase thrust. A flow deflecting disc mounted downstream of the funnel blades directionally affects thrust or impedes flow for a braking effect. Passages circumferentially spaced about the discharge end of the exhaust control tube,

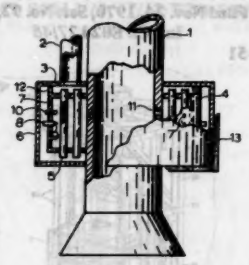
vent the exhaust gas while the flow deflecting disc is in the braking position.

3,685,294

HOT GAS PUMPS AND THRUSTERS

Daniel E. Nelson, 2925 David Ave., Apt. No. 13, Pacific Grove, Calif.

Filed May 4, 1970, Ser. No. 34,257
Int. Cl. F02k 7/00
U.S. Cl. 60—266 4 Claims



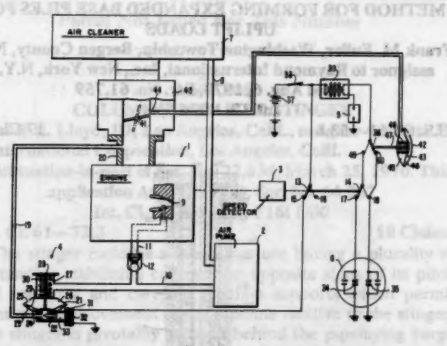
This is a hot gas dredger or pump in which compressed air is mixed with fuel and ignited in a combustor near the end of a tube into which hot gases from the ignited fuel and air are directed in a direction generally towards one of the tube such that a partial vacuum condition is created after the gases and a thrust from the mass flow of the gases is created in the opposite direction of the gas flow to cause a pumping or propelling action.

3,685,295

CONTROL SYSTEM FOR PURIFYING EXHAUST GAS OF AN INTERNAL COMBUSTION ENGINE

Yasuo Tatsutomi, No. 478-62, Nakayama-cho, Hiroshima, and Tomoo Takokoro, No. 979, Terrohon-machi, Kure, both of Japan, assignors to Toyo Kogyo Company Limited, Hiroshima-ken, Japan

Filed March 10, 1970, Ser. No. 18,144
Claims priority, application Japan, March 10, 1969, 44/18204
Int. Cl. F02b 75/10; F02p 5/08, 15/02
U.S. Cl. 60—290 5 Claims



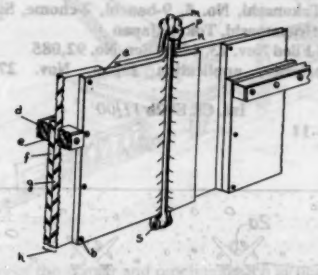
An air pump driven by the engine supplies secondary air through a conduit to the exhaust passage of the engine. The ignition system of the engine has the actuation of ignition means varied by delaying or cutting off ignition at low vehicle or engine speed but maintaining normal actuation of ignition means over a predetermined speed while supplying secondary air from the air pump to the exhaust passage within a predetermined low engine or vehicle speed but preventing the secondary air from reaching the exhaust passage above a predetermined speed.

3,685,296

ELASTOMERIC OIL SLICK BOOM

Theodore Oscar Bogosian, 8 Kathleen Place, Somerville, N.J.

Filed Aug. 15, 1972, Ser. No. 752,908
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 2 Claims



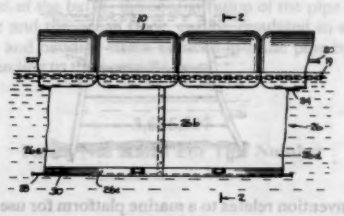
A buoyant barrier boom which preferably typically comprises a relatively rigid sheet of asbestos rubber of about 10 percent to about 20 percent styrene-butadiene rubber content by weight, having a closed cell sponge attached to both faces of the sheet in a position whereby at least two-thirds of the sheet is below water level when floated in water in an erect position substantially vertical to the surface of the water, the portion of the sheet located substantially below water level being laminated with an additional sheet of the rubber-asbestos material in order to provide any additional weight necessary to maintain the structure in an upright position, and in order possibly to provide additional strength, the sheet additionally having attached to each end of the boom a flexible compressed rubber sheet having about a 60 percent to about 70 percent content of styrene-butadiene rubber, each of the laminated sheets being about one-eight inch thick, the sponge material being partially enclosed by the rubber asbestos sheeting of a minor thickness to protect the sponge against abrasion, an achoring means for restraining the boom in a relatively fixed position in water, and a removable clamp for pinching together two flat and overlapped surfaces of the flexible compressed rubber sheet whereby two or more of the booms may be easily attached in series.

3,685,297

APPARATUS FOR CONFINING FLOATING MATERIALS

Walter Juodis, Mishawaka, Ind., and George J. Gauch, Greenville, R.I., assignors to Uniroyal, Inc., New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,583
Int. Cl. E02b 15/04
U.S. Cl. 61—1 F 33 Claims



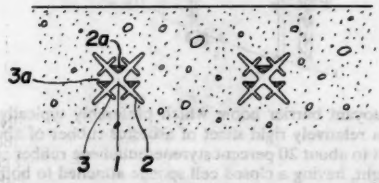
An apparatus in which detachably connected floats form a barrier on the surface of a liquid for confining materials i.e. pollutants floating thereon. A plurality of adjacent floats are longitudinally arranged in an end-to-end relation. The end wall of at least one of the floats has a movable portion which is biased in a longitudinal direction toward the corresponding end wall of the next adjacent float so as to form a seal between adjacent floats. Each of the opposed end walls includes a portion adjacent the movable portion thereof for operatively

securing together the floats, and for preventing the movable portions from moving apart further than a predetermined distance so as to maintain the movable portions in sealing engagement.

3,685,298
DRAINER

Michinobu Takanashi, No. 5, 9-banchi, 2-chome, Sakae-cho, Higashi, Mirayamashi, Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 92,085
Claims priority, application Japan, Nov. 27, 1969, 44/112,110
Int. Cl. E02b *11/00*
U.S. Cl. 61—11 6 Claims



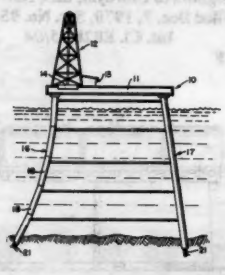
A subsoil drainer for draining seepage water, in which an elongated member has at least three radially projecting continuous ribs and continuous integral cross pieces on at least two of the radially projecting ribs. The drainer may be installed in subsoil singly or bunched together with like members to provide a quick and unblocked drainage of seepage water especially in reclaimed land.

3,685,299
Patent Not Issued For This Number

3,685,300
MARINE PLATFORM WITH CURVED SUPPORT LEG

George E. Mott, Texaco Inc., P.O. Box 60252-70160, Metairie, and Johnnie J. Ziober, Texaco Inc., P.O. Drawer 1219-70380, Morgan City, both of La., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,950
Int. Cl. E02b *17/00*; E02d *21/00*; E21b *15/02*
U.S. Cl. 61—46.5 6 Claims

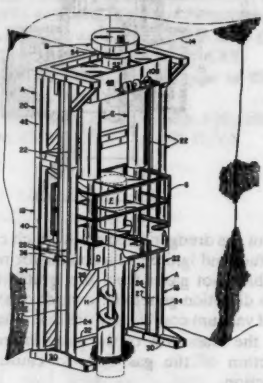


The invention relates to a marine platform for use in drilling wells at an offshore body of water. The platform includes one or more vertically spaced decks that are raised beyond the water's surface by a plurality of downwardly extending support legs. The respective legs are interconnected one to the other along their length and form an outwardly divergent pattern with respect to the decks. At least one of the legs is structured with an arcuate configuration. Said curved leg further encloses an elongated pile or piles that extend from the platform and are imbedded in the substratum. The piles, which are also curved, thereby function as guide members to bend a descending drill string in a desired direction. The string is thus deviated from a vertical disposition to achieve an initial direction preliminary to the boring of a directionally drilled well.

3,685,301
PROCESS AND APPARATUS FOR THE INSTALLATION OF JACK PILES

Russel L. Heacox, Santa Rosa, Calif., assignor to P & Z Company, Inc., South San Francisco, Calif.

Filed Nov. 24, 1970, Ser. No. 92,375
Int. Cl. E02d *27/48*
U.S. Cl. 61—51 5 Claims

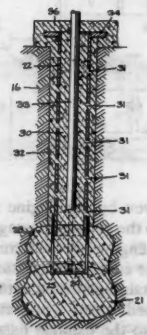


Apparatus is illustrated for the placement of jack piles underneath footings of existing buildings. Typically, tunneling is provided to expose a segment of the building. The jack pile apparatus of this invention is erected under the exposed footing. Once erected, the apparatus is jacked to securely rest on the bottom surface of the tunneling at its lower end and to support the exposed portion of the footing at its upper end. The jack pile casing is jacked or crowded from the apparatus in discrete sequential segments. Simultaneously with this jacking the earth from the center of the jack pile casing is removed with a continuous flight auger. Once the casing is inserted, concrete is used to fill the casing and support the exposed footing.

3,685,302
METHOD FOR FORMING EXPANDED BASE PILES FOR UPLIFT LOADS

Frank M. Fuller, Washington Township, Bergen County, N.J., assignor to Raymond International, Inc., New York, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,759
Int. Cl. E02d *5/44*
U.S. Cl. 61—53.6 17 Claims



This invention relates to a method for forming an expanded base pile capable of sustaining compression and uplift loads

characterized by an elongated tensile element intimately connected to an expanded base and connected to a structure at the top, thereby to transfer the uplift load from the structure to the pile.

3,685,303

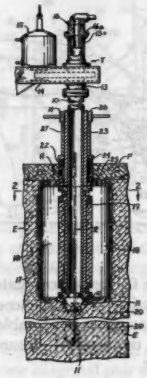
MEANS FOR STABILIZING STRUCTURAL LAYER OVERLYING EARTH MATERIALS IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio

Division of Ser. No. 755,273, Aug. 26, 1968, Pat. No. 3,530,675. This application March 2, 1970, Ser. No. 15,355

Int. Cl. E02d *3/12, 17/12*; E21b *9/21*

U.S. Cl. 61—63 **7 Claims**



Method and means for providing solid columnar support under structural layer, overlying earth materials of an earth situs. Expansible agitator means projected through relatively small diameter hole in overlying layer and expanded to agitate and loosen earth materials to define elongated body thereof of greater peripheral size than hole. Self-hardenable fluid pumped through hole into loosened earth, is allowed to harden after removal of contracted agitator means through small hole. Resultant rigid, composite column underlies area of structural layer surrounding hole for the solid support of same.

3,685,304

Patent Not Issued For This Number

3,685,305

COLUMN STABILIZED STINGER

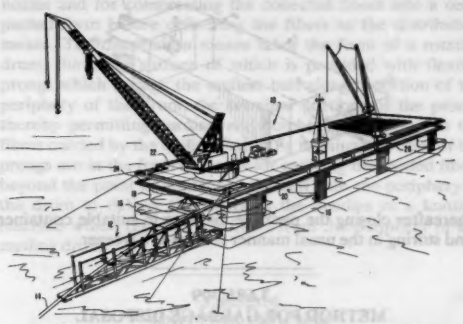
Samuel H. Lloyd, III, Los Angeles, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 22,634, March 25, 1970. This application Aug. 17, 1970, Ser. No. 64,267

Int. Cl. B63b *35/04*; F16l *1/00*

U.S. Cl. 61—72.3 **18 Claims**

The stinger includes a base structure having a plurality of upstanding stabilizing columns on opposite sides of its pitch and roll axes and carrying pipeline supports which permit translational movement of the pipeline relative to the stinger. The stinger is pivotably secured behind the pipelaying barge and is ballasted from a low draft condition with the base structure having freeboard to a high draft condition. The pipeline supports progressively decrease in height above the base structure from the end of the segment nearest the barge whereat the pipeline is supported in the air toward the opposite end whereat the aft pipeline support disposes the pipeline below the mean waterline. The pipeline centerline extending along the supports defines a radius of curvature at least equal to and preferably much greater than the minimum allowable radius of curvature for the pipeline. The stinger is preferably configured such that the combined natural



frequency of the stinger and pipeline match as nearly as possible the natural frequency of the pipelaying barge.

3,685,306

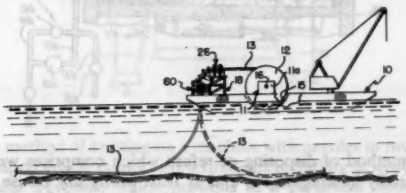
SUBSEA PIPE LAYING APPARATUS AND METHOD

George E. Mott, Metairie, La., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,017

Int. Cl. F16l *1/00*; B63b *35/04*; B65h *25/24*

U.S. Cl. 61—72.3 **8 Claims**



The invention relates to a method and apparatus for laying a continuous pipeline or conduit from a floating barge, onto the floor of a body of water. The apparatus includes a floatable barge which supports an upstanding spool of continuously wound rigid, though resilient walled pipe. The spool is operably carried in an upright position on a reel stand whereby the conduit can be controllably unwound and the reel promptly replaced. Immediately after leaving the reel and prior to entering the water, the conduit is passed progressively through a pipe tensioner, a straightener, and a strain sensor. By coordinating the tension in the pipe with the forward movement of the barge, the configuration of the pipe between the barge and the ocean floor, can be regulated to minimize tensional and bending strain induced into the pipe by reason of its extending to the ocean floor.

3,685,307

Patent Not Issued For This Number

3,685,308

CHILLING CONSUMER SIZE FOOD PACKAGES

Burton R. Lundquist, 1461 Cloverdale, Highland Park, Ill.

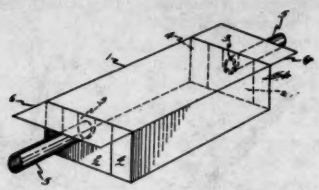
Filed Sept. 22, 1969, Ser. No. 859,827

Int. Cl. F25d *7/00*

U.S. Cl. 62—60 **10 Claims**

A method of quickly lowering the temperature of a non-insulated consumer size prepackaged unfrozen food items comprising injecting a rapidly vaporizing coolant such as liquid

nitrogen, carbon dioxide snow, liquid freons or the like, into a non-insulated consumer size package containing food, and



thereafter closing the package, packing in suitable containers and storing in the usual manner such as in a freezer.

3,685,309

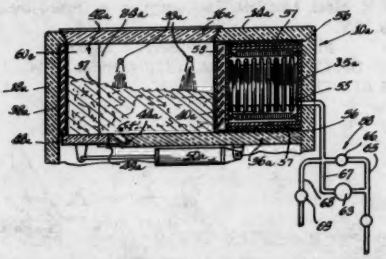
METHOD FOR GARBAGE DISPOSAL

Richard D. Harza, 400 W. Madison St., Chicago, Ill.

Continuation of Ser. No. 824,874, May 15, 1969, which is a division of Ser. No. 677,206, Oct. 23, 1967, Pat. No. 3,514,969. This application Feb. 18, 1970, Ser. No. 12,416

Int. Cl. F25d *25/00*

U.S. Cl. 62—62 **4 Claims**



A method of disposing of refuse which comprises wetting nominally heterogeneous and at least partly dry refuse with water, compressing the moistened refuse, and freezing the moistened, compacted refuse into solid pellets.

3,685,310

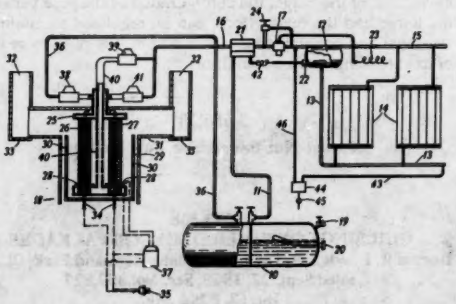
OPEN CYCLE AMMONIA REFRIGERATION SYSTEM INCLUDING A CATALYTIC AMMONIA BURNER

Harry C. Fischer, Royal Oak, Md., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,646

Int. Cl. F25b

U.S. Cl. 62—114 **17 Claims**



This invention provides an open cycle refrigeration system wherein ammonia, supplied from a refillable storage tank, is employed as a refrigerant, and after serving as the refrigerant, is disposed of by dissociation and combustion. HaVing substantially no moving parts and requiring no source of power when in operation, the refrigeration system of the invention has low initial cost and requires little maintenance. As a result of these features, the refrigeration system is especially useful in providing in-transit refrigeration for perishable or frozen commodities.

3,685,311

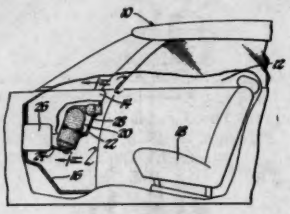
EVAPORATOR-BLOWER PACKAGE

Arthur T. Bassett, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 1, 1972, Ser. No. 148,524

Int. Cl. B60h *3/04*

U.S. Cl. 62—244 **3 Claims**



A cooling package for an automobile passenger compartment including a housing which encloses an evaporator core and a motor driven fan having rotatable air outlets to permit alternate horizontal or vertical mounting of the package within the automobile.

3,685,312

Patent Not Issued For This Number

3,685,313

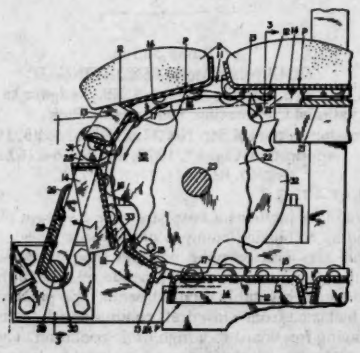
DOUGH PAN ASSEMBLY FOR CONVEYING, FREEZING AND DISCHARGING SOLIDLY FROZEN DOUGH LOAVES

Herbert C. Rhodes, 400 N.E. 11th Ave., Portland, Oreg.

Filed March 22, 1971, Ser. No. 126,839

Int. Cl. F25c *7/12*

U.S. Cl. 62—345 **4 Claims**



A series of dough pans, carried by a pair of endless traveling chains, convey the dough through freezing chambers causing it to be frozen solid. Each pan is divided transversely into two separable portions. When the pan reaches the end of the chain course the forward portion of the pan turns downwardly out of alignment with the remaining rear portion leaving the forward

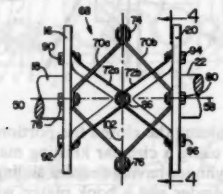
end of the dough protruding from the latter. At this point a separator blade engages the bottom face of the protruding dough and, with the continued travel of the pan, the dough is thrust outwardly and downwardly over the separator blade and entirely free from the pan.

3,685,314

FLEXIBLE UNIVERSAL JOINT

William G. Flannelly, South Windsor, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed March 25, 1971, Ser. No. 127,887
Int. Cl. F16d 3/62
U.S. Cl. 64—12 **10 Claims**



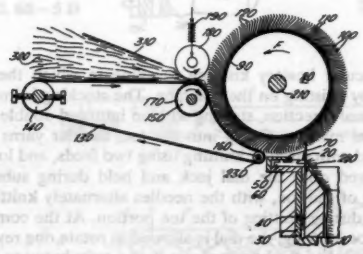
A flexible universal joint for connecting two elements having axes intersecting at the center of the joint comprises two sets of flexible members, each set being comprised of first and second flexible members, extending between the elements. Each flexible member has four leg sections serially interconnected and arranged in opposed pairs with connecting points located between the leg sections. Each set of flexible members is formed by joining one diagonal pair of connecting points on the first flexible member to a mating diagonal pair of connecting points on the second flexible member of the same set. The sets of flexible members extend coaxially of one another between the elements and are attached to the elements by means of the non-mated diagonal pairs of connecting points of each set. The attachment points of the non-mated pairs with each element are distributed at 90° intervals about the axes of the elements so that the two coaxial sets of flexible members have corresponding parts phased 90° from one another about the common axis of the sets and thereby cause the transverse bending axes of the flexible joint to be coincident at the geometric center of the joint.

3,685,315

CARDING ARRANGEMENT FOR DEEP PILE KNITTING MACHINES

Jean Henri Delberghe, 5 Place des Fetes, 60 Hermes, France, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Sept. 4, 1970, Ser. No. 69,744
Int. Cl. D04b 9/14
U.S. Cl. 66—9 B **6 Claims**



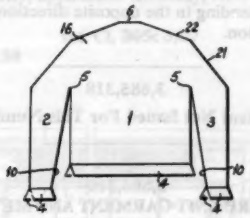
Apparatus for collecting a stream of elongated fibers, transporting the fibers to a distributing means, and distributing the collected fibers to the needles of a knitting machine for producing fur-like fabrics. A generally conical shaped collecting nozzle directs the stream of loose fibers to a section of an endless belt. The belt aids in carrying the collected fibers to a pressure roller assembly for drawing the fibers through the nozzle and for compressing the collected fibers into a compacted form before delivering the fibers to the distribution means. The distribution means takes the form of a rotating drum, the outer surface of which is provided with flexible prongs which engage the endless belt along a portion of the periphery of the drum, the terminal portions of the prongs thereby permitting carding and combing operations on the fibers carried by the endless belt. The terminal portions of the prongs are in the form of hooks for carrying the carded fibers beyond the point of contact of the belt with the periphery of the drum to deliver the fibers to the needles of a knitting machine which removes the fibers from the periphery of the carding drum.

3,685,316

KNITTING PROCESS

Frank Robinson, Borrowash, and Frederick Nunnerley Chell, London, both of England, assignors to Courtaulds Limited, London, England

Filed Oct. 23, 1969, Ser. No. 868,801
Int. Cl. A04b 7/04
U.S. Cl. 66—64 **17 Claims**



A method of knitting on a machine with needles in two beds a shaped article comprising a first part including at least three tubular portions, which portions at a particular course of stitches merge into a second part including a single tubular portion comprising the steps, in either order of knitting the tubular portions of the first part on groups of needles on both neds so as to leave at least one spare needle on each bed between the groups of needles, knitting the second part by tubular knitting on three groups of needles of both beds leaving at least one spare needle on each bed between the groups, and including the steps of continuing knitting until the course of knitting immediately prior to said particular course, moving the needle beds to bring the needles into staggered relationship, receiving on a spare needle between each pair of groups in each bed a loop from yarn previously and subsequently supplied to needles of the other bed in the same course, moving the needle beds back to their original relationship, and continuing the knitting to complete the part of the garment remaining unknitted. A knitting machine for carrying out the method is also claimed.

3,685,317

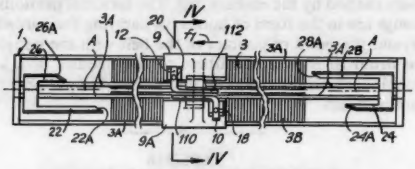
DEVICE FOR TENSIONING STITCHES BEING FORMED IN HOSIERY DUAL-BED FLAT MACHINES

Alfredo Giachetti; Enzo Maranghi; Lastra A. Signa, and Angiola Pieracci, all of Staffoli, Italy, assignors to G. Billi & C. S.p.A., Firenze, Italy

Filed Nov. 19, 1970, Ser. No. 91,122
Int. Cl. D04b 7/04
U.S. Cl. 66—64 **5 Claims**

In a flat bed knitting machine having spaced inclined needle beds wherein a cam carriage moves back and forth along the needle beds to reciprocate the needles to form stitches thereon, during which the needles of both beds thereof cross

each other as the knitting waves of the needles move back and forth along the needle beds, the combination therewith of a pair of rod-like stitch tensioning stems supported by, and movable with, the cam carriage, each stem having a free end portion extending parallel to the direction of travel of the cam carriage with the free ends laterally positioned and extending in opposite directions, the stems being interchangeably movable into, and out of, operative positions between the needle



beds wherein the operatively positioned stem is beneath the crossed needles, and is in contact with, and exerts pressure upon, the stitches on the crossed needles of the knitting waves. The machine has means to interchangeably position the stems at each end of the cam carriage stroke, so that as the cam carriage moves in each of its directions of travel, the stem having its free end extending in the opposite direction is placed into operative position.

3,685,318

Patent Not Issued For This Number

3,685,319

SHEER WARP KNIT GARMENT AND METHOD FOR MAKING SAME

George E. Jackson, 702 Colony Dr., Charleston, W. Va.

Filed Nov. 27, 1970, Ser. No. 93,126
Int. Cl. D04b 23/02
U.S. Cl. 66—87 R 5 Claims

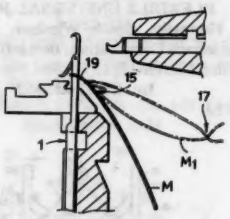
Continuous, back-to-back tubular undergarments, having sheer, lock-stitched body portions and spaced, reinforced toe, heel, welt, or panty portions, are produced on a double-needle-bar Raschel knitting machine having at least 12 guide bars. The basic body knit is chain-stitched wales of one strand, the wales being connected by zig-zag stitches of another strand. The chain stitches are converted to a jersey 2-0, 2-4 stitch in the reinforced area so that no guide bar must move more than one needle space to form the garment.

3,685,320

METHOD FOR MANUFACTURE OF STOCKING TOES

Edmondo Gorini, Via San Vittore 38/B, Milan, Italy

Filed April 3, 1969, Ser. No. 812,996
Claims priority, application Italy, April 10, 1968, 4513 A/68
Int. Cl. D04b 9/54, 9/56
U.S. Cl. 66—95 5 Claims



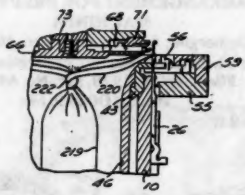
A method of knitting the closed toe portion of an article of knitted footwear using a circular knitting machine which includes a needle cylinder having needles sliding in longitudinal grooves of the cylinder and a hook platen with hooks which slide in radial grooves of the platen, comprises first knitting a main portion and thereafter knitting an annular section pouch with a double layer of fabric at one end of the main portion, each layer being knitted on a lesser number of needles than the main portion. Retaining loops are then formed on the hooks at the end of the double layer substantially at the extremity of the toe portion. A first end flap of fabric is formed after the loops between the hooks and the needles and thereafter the first end flap is disengaged from the needles by keeping it engaged to the hooks through the intermediary of the loops. The two layers are then collected together or throttled in order to close the fabric and the loops are returned to the needles. Thereafter a further course of stitches is knitted to produce a second final flap.

3,685,321

CIRCULAR KNITTING MACHINE

John J. Millar, Laconia, N.H., assignor to Scott & Williams, Inc., Laconia, N.H.

Filed Aug. 15, 1968, Ser. No. 752,937
Int. Cl. D04b 9/54, 9/56
U.S. Cl. 66—95 3 Claims



A circular hosiery knitting machine in which the toe is closed by twisting on the machine. The stocking is knitted in the normal direction, starting with an inturned double welt in the usual manner. Going into the toe, heavier yarns are introduced with circular knitting using two feeds, and loops are transferred onto the dial jack and held during subsequent knitting of the toe, with the needles alternately knitting and welting during knitting of the toe portion. At the completion of the toe knitting, the dial is allowed to rotate one revolution with respect to the body to introduce a twist between the dial loops and the needles. After the twisting has been done, the loops are transferred onto the needles and knitted in, after which additional fabric courses defining a tab are knitted with an anti-ravel structure, and the stocking is pressed off.

3,685,322

DEVICE FOR THE CARBONIZATION OF WOOL

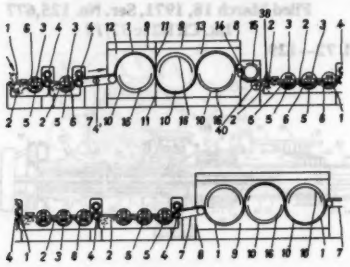
Heinz Fleissner, and Gerold Fleissner, both of Egelsbach near Frankfurt, Germany, assignors to Anstalt fur Patentdienst, Vaduz/Liechtenstein, Germany

Division of Ser. No. 539,529, April 1, 1966, Pat. No. 3,537,810. This application Oct. 14, 1969, Ser. No. 870,793

Claims priority, application Germany, April 14, 1965, A 48926; Oct. 14, 1965, A 50486

Int. Cl. D06c *7/04*

U.S. Cl. 68—2 17 Claims



A device having a plurality of treatment units for carrying out the continuous carbonization of wool, comprising first means for acidifying the wool including first conveying means, comprising sieve drum means subjected to a suction draft wherein the treatment liquid is drawn from the outside to the inside of the drum, extraction means operatively connected behind said first means for extracting acid from the wool, first drying means operatively connected behind said extraction means for drying the wool and effectively subdivided into a drying zone and into a baking zone, removing means operatively subdivided into a drying zone and into a baking zone, removing means operatively connected behind said drying means for removing the carbonized matter from the wool, and neutralizing means forming at least one neutralizing bath for neutralizing the acid remaining within said wool, said neutralizing means being operatively connected behind said removing means.

3,685,323

PROCESS AND APPARATUS FOR THE CONTINUOUS FINISHING OF KNIT FABRICS AND HOSIERY GOODS

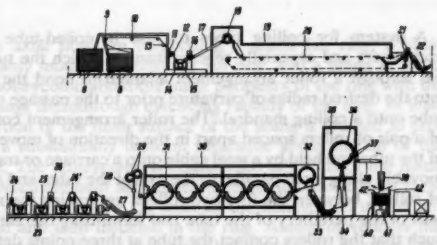
Ludwig Bosch, Kapellenweg 18, 7760, Radolfzell/Bodensee; Sigmund Fleiner, Schlossberg, 10, Guttingen/Bodensee, and Heinz Fleissner, Wolfsgartenstr. 6, Egelsbach near Frankfurt am Main, all of Germany

Filed Aug. 28, 1969, Ser. No. 853,673

Claims priority, application Germany, Aug. 28, 1968, P 17 85 227.6; May 2, 1969, P 19 22 492.7

Int. Cl. D06c *1/06*

U.S. Cl. 68—5 D 23 Claims



An apparatus for the treatment of knit textile materials which comprises first spreader means for introducing a plurality of webs in a spread-out state in a side-by-side relationship into a plurality of treatment stages, the first treatment stage includes means for impregnating the textile material with a treatment liquor and means for dehydrating the knit textile material after impregnation, the second treatment stage includes a steam treatment chamber with means for conveying the textile material through the chamber, the third treatment stage includes at least one suction drum washing bath means positioned behind the steam treatment chamber for washing the impregnated textile material, and the fourth stage includes a sieve drum dryer for drying the knit textile material. In addition, the apparatus is also provided with means for conveying the knit textile material through each of the treatment stages substantially without tension, means for guiding the material between the stages and additional spreader means for spreading out the material between various treatment stages.

3,685,324

APPARATUS FOR THE TREATMENT OF WEBS OR YARNS

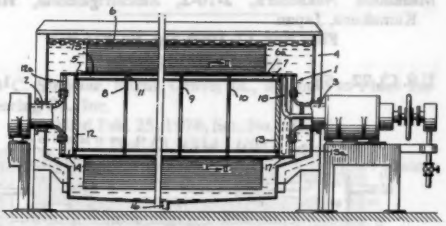
Hermann Vorderbruegge, Krackser Strasse 33, D-4814 Senne I Post Windelsbleiche, and Ludwig Mehrmann, Pivitsheider Strasse 84, D-4936 Augustdorf Uberdetmold, both of Germany, assignors to Heherlein & Co., A. G. Wattwil, St. Gall, Switzerland

Filed Nov. 18, 1970, Ser. No. 90,699

Claims priority, application Germany, Nov. 24, 1969, P 19 58 866.0

Int. Cl. B05c *8/02*

U.S. Cl. 68—150 8 Claims



Apparatus for the fluid treatment of thread or sheet-like material with fluids comprising, a perforated drum about which the material to be treated is wrapped, and characterized in that a member is arranged within the drum to reduce the space therein to be occupied by the fluid so that efficient treatment may be effected with a relatively small amount of fluid.

3,685,325

APPARATUS FOR LIQUID TREATMENT OF TEXTILE MATERIAL WEBS

William T. Carpenter, Stanley, N.C., assignor to Synalloy Corporation, Spartansburg, S.C.

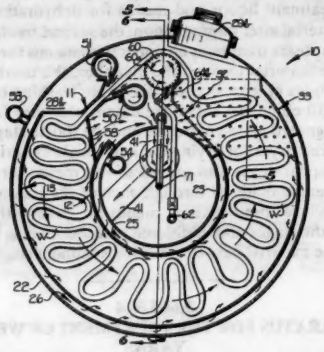
Filed April 27, 1971, Ser. No. 137,760

Int. Cl. B05c *3/134*

U.S. Cl. 68—177 13 Claims

Textile material webs are subjected to liquid treatment while in open width form by an apparatus and method in which a length of textile web to be treated is arranged in an open width loop and is moved within a generally annular chamber by direction of portions of a circulating liquid flow through a throat zone for entraining the textile web. Treatment liquid is impinged against both surfaces of the textile web by direction of portions of the circulating liquid flow through spaced arcuate inner and outer walls which define a treatment zone adjacent to and of a greater cross-sectional area than the throat zone. Agitated contact of treatment liquid with the textile web material occurs throughout both the

throat and treatment zones and thorough treatment of the textile web is thereby facilitated. Further, distribution of the portions of the circulating liquid flow assures uniformity of conditions throughout the throat and treatment zones.



3,685,326

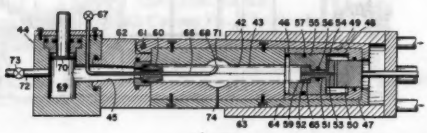
Patent Not Issued For This Number

3,685,327

BULGING APPARATUS

Masanobu Nakamura, 2-10-2, Shichirigahama, Higashi, Kamakura, Japan

Filed Nov. 12, 1969, Ser. No. 875,967
Int. Cl. B21d *26/04*
U.S. Cl. 72—58 **1 Claim**



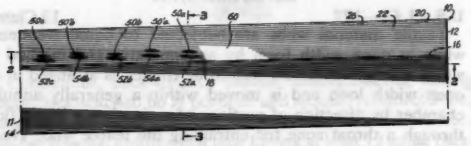
A fluid pressure bulging apparatus for bulging tubular work is connected with a pressure generating means. A dummy block is fitted to one end of the tube being worked in order to automatically move the work axially by the hydraulic fluid pressure which is exerted on the inside of the work.

3,685,328

THREAD ROLL DIES

Mark Richard Carpenter, 121 Apel Ave., Oreland, Pa., and Albert P. Ludwig, Richboro, Pa.

Filed Sept. 4, 1970, Ser. No. 69,689
Int. Cl. B21h *3/06*; B21d *17/04*
U.S. Cl. 72—88 **6 Claims**



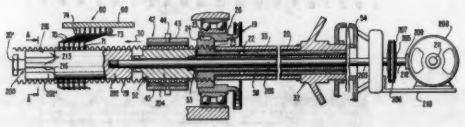
A thread rolling die for forming dissimilar thread forms on a cylindrical bolt blank. The die forms a continuous constant pitch spiral thread on the cylindrical blank with a truncated thread form at one end and a full thread form on the remainder thereof. Additionally, the die is constructed to include depressions in its face which form cam-shaped lobes on the truncated portion of the screw thread to provide a unitary thread rolling screw.

3,685,329

APPARATUS FOR HELICALLY CORRUGATING FLEXIBLE TUBULAR METAL FOIL DUCTS

Charles William Amos; Maynard Dale Johnson, both of Harrisonburg, and John Jacob Dieckmann, Rockingham County, all of Va., assignors to Dunham-Bush, Inc., Harrisonburg, Va.

Filed March 18, 1971, Ser. No. 125,677
Int. Cl. B21c *37/12*
U.S. Cl. 72—129 **5 Claims**



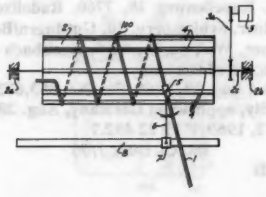
A fluted mandrel rotates within a flexible, axially moving, metal foil, corrugated tubular duct as it is being continuously formed, downstream of the corrugation forming dies to remove burrs from the internal surfaces created during wrapping of the foil strips to form the tube and corrugation of the same to lower resistance to air flow through the tubing during usage.

3,685,330

METHOD OF AND APPARATUS FOR HELICALLY COILING PIPE

Robert Funke, Tacherting, Germany, assignor to Linde Aktiengesellschaft, Wiesboden, Germany

Filed Feb. 24, 1970, Ser. No. 13,378
Claims priority, application Germany, Feb. 27, 1969, P 19 10 061.9
Int. Cl. B21f *35/02, 3/04*
U.S. Cl. 72—137 **12 Claims**



A system for coiling tubes for use in coiled-tube heat exchangers and especially regenerators, in which the tube is fed through a roller arrangement adapted to bend the tube into the desired radius of curvature prior to the passage of the tube onto a coiling mandrel. The roller arrangement consists of a pair of rollers spaced apart in the direction of movement of the tube and held by a steel cable onto a carriage or traveler movable along a rail parallel to the axis of the tube, and a pair of rollers, between the first two rollers, embracing the major part of the periphery of the tube and formfitting therearound such that the rollers contact the tube at three points defining the curvature. The tube is thus bent into substantially its final curvature prior to its deposition upon the mandrel.

3,685,331

APPARATUS FOR ROLLING AND FORMING ARTICLES

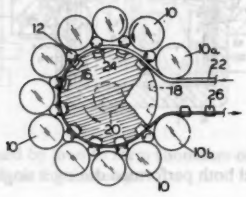
Jacob Marcovitch, Johannesburg, South Africa, assignor to Rotary Profile Anstalt, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 615,613, Feb. 13, 1967, Pat. No. 3,533,259. This application Dec. 31, 1969, Ser. No. 889,626

Claims priority, application South Africa, Feb. 14, 1966, 66/804

Int. Cl. B21b *12/00*

U.S. Cl. 72—190 5 Claims



This invention relates to apparatus for rolling forming articles by rolling them into recesses in die means. The articles are rolled by forming rollers arranged in C shape and with a cylindrical rotatable member within the C and having die recesses formed therein into which recesses the material of the articles are rolled.

3,685,332

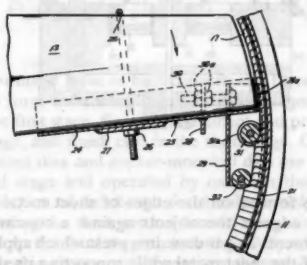
AXIAL FLOW FANS

Eugene M. Davidson, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Division of Ser. No. 852,140, July 3, 1969, Pat. No. 3,588,271. This application July 19, 1970, Ser. No. 64,838

Int. Cl. B21d *51/00*

U.S. Cl. 72—216 3 Claims



An axial flow fan comprising a rolled fan ring, a blade rotatably mounted within the fan ring, and a lining of metal foil honeycomb about the inner periphery of the ring with the openings therethrough extending radially of the ring. At least a portion of the inner surface of the lining is crushed to provide a substantially uniform clearance about the tip of the blade. The honeycomb is constructed of sheets of the metal foil which are bent and joined together at spaced apart locations by an adhesive. A layer of the honeycomb is first annealed and then installed in the ring. Annealing renders the honeycomb soft and substantially destroys the bond so that the lining may be crushed to only a fraction of its original thickness.

3,685,333

HYDRAULIC SHEET-STRETCHING MACHINES

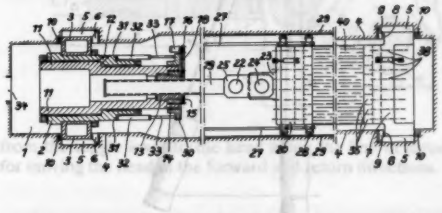
Fritz Priebe, Duisburg, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 25, 1969, Ser. No. 879,822

Claims priority, application Germany, Nov. 27, 1968, P 18 11 225.9

Int. Cl. B21d *11/02*

U.S. Cl. 72—302 5 Claims



A hydraulic sheet-stretching machine with a stretching grip and a stationary counter-grip, with means for the axial adjustment and arresting of these grips, and a stretching cylinder with a cylinder crossbeam and a stretching piston, the machine being erected in a foundation pit having side walls which form a power-transmitting connection between the cylinder crossbeam and the counter-grip, the cylinder crossbeam and the counter-grip being provided with means supporting them against axial thrust, the said supporting means bearing against the side walls of the foundation pit.

3,685,334

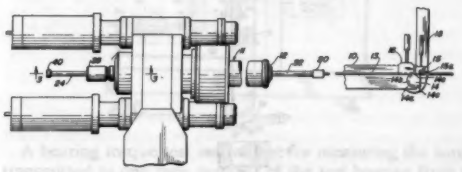
BENDING MACHINE

Ernest C. Sindelar, Sugar Grove, Ill., assignor to Pines Engineering Co., Inc.

Filed Feb. 25, 1970, Ser. No. 13,982

Int. Cl. B21d *11/04*

U.S. Cl. 72—311 7 Claims



A tube bending machine having the capability of releasing the tube from the carriage for longitudinal movement during bend formation, while maintaining a plane of bend reference. The end of the tube is connected with a rod extending through the carriage collet. The rod has a non-round cross-section and extends through a mating adapter on the carriage which permits relative longitudinal movement while preventing relative rotation between them.

3,685,335

TUBE BENDER

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial-Eastman Corporation

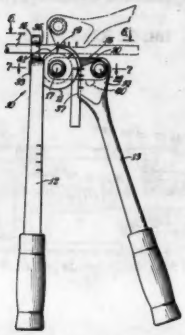
Filed Nov. 5, 1970, Ser. No. 87,258

Int. Cl. B21d *11/04*

U.S. Cl. 72—319 15 Claims

A tube bender having a mandrel provided with a groove. A shoe is swingably mounted in association with the mandrel to move around the groove and press a tube thereinto to effect a desired bend. A hook is fixedly associated with the mandrel to

limit movement of the tube during the bending operation. The tool is constructed to permit the lateral movement of the tube into association with the hook and mandrel in a bend start position.

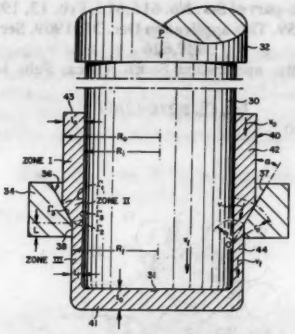


3,685,336
PUNCHING TOOL FOR PRODUCING CONNECTOR NAIL PLATES
William Hill Black, Jr., P.O. Box 85, Edenton, N.C.
Filed Aug. 24, 1970, Ser. No. 66,302
Int. Cl. B21d *31/02*; B21c *3/16*
U.S. Cl. 72—325 **10 Claims**

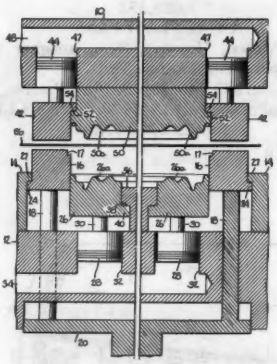
A punching tool for producing, with minimum wear and maintenance of the tool, opposed prongs on a connector nail plate in which a rectangularly cross-sectioned tool has on its terminal cutting end a leading penetrating point developed from longitudinally spaced angular faces depending from a diagonal, relieved cutting edge in which angular faces merge on a transverse radius with opposed V-shaped side edges of the tool.

3,685,337
SHAPING OF HOLLOW WORKPIECES
Betzalel Avitzur, 817 N. 31st St., Allentown, Pa.
Filed Dec. 30, 1969, Ser. No. 889,218
Int. Cl. B21d *22/20*
U.S. Cl. 72—347 **18 Claims**

A hollow workpiece to be ironed is subjected to a relatively large frictional force at its interior engaged by a punch, and to a smaller frictional force at its outside engaged by a die, whereby tensile stresses in the ironed portion of the workpiece are decreased and larger reductions in wall thickness are rendered possible per die. Deep drawing may be combined with ironing and both performed during a single stroke of the punch.



3,685,338
HEM FORMATION
Bernard L. Hoffman, Trenton, N.J., assignor to Frederick A. Krause Associates, Inc., Frenchtown, N.J.
Filed April 24, 1970, Ser. No. 31,550
Int. Cl. B21d *19/12*
U.S. Cl. 72—348 **6 Claims**

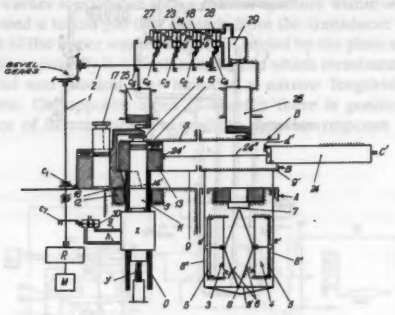


Hems are formed on the edges of sheet metal objects by forcing the edge of the objects against a concavely curved forming element. This is done in a press which applies force in the plane of the sheet metal while supporting its sides against buckling.

3,685,339
METHOD AND APPARATUS FOR MANUFACTURING BEARING RINGS
Traian Goguta, Brasov, Romania, assignor to Uzina Rulmentul, Brasov, Romania
Filed June 25, 1969, Ser. No. 836,474
Claims priority, application Romania, Jan. 16, 1969, 58780
Int. Cl. B21d *22/06*
U.S. Cl. 72—354 **9 Claims**

Method and apparatus for forming ball bearing races from lengths of tubing. A mandrel is inserted into the interior of the tube. A die having a shape conforming to that of a ball bearing

raceway is positioned about the exterior of the tube at approximately its midpoint. The opposite axial ends of the tube are



then compressed by jaws to form shoulders on each axial end of the tube to form the raceway.

3,685,340

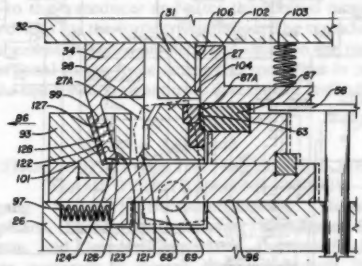
METAL FORMING METHOD AND APPARATUS

Merritt Otis Lamm, Muncie, Ind., assignor to Ken-Bar Tool & Engineering, Inc., Muncie, Ind.

Filed June 15, 1970, Ser. No. 46,099

Int. Cl. B21d *11/20*

U.S. Cl. 72—398 **11 Claims**



A conventional press of high capacity has three sets of dies therein to form an ironing board in three stages, blank and draw in the first stage, flange embossment and pre-curl in the second stage, and finish curl in the third stage. Co-operating slide-mounted dies and rocker-mounted dies are provided in the second stage and operated by cams on the press ram-mounted section of the die set for simultaneously embossing and pre-curling the skirt portion around the entire perimeter of the part. In the third stage, a locating cavity with a bottom wall of circular cross section receives the pre-curled lower edge of the skirt and forms the finished curl thereon as the press closes.

3,685,341

RAM HEAD AND ADJUSTABLE CONNECTOR COMBINATION

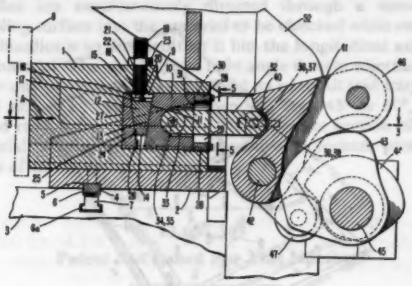
George D. Karsnak, Muncie, Ind., assignor to U.S. Engineering Company, Inc., Muncie, Ind.

Filed June 16, 1970, Ser. No. 46,750

Int. Cl. B21j *9/18*

U.S. Cl. 72—450 **14 Claims**

A ram head mounted on a machine bed for reciprocal movement along a line of force axis in a forward direction for mechanical action, e.g., forming, punching, stamping, etc., and in a return direction and activated by a cam operated toggle lever. An adjustable wedge is provided to transmit forces



from the toggle lever to the head along the line of force axis for moving the head in the forward and return directions.

3,685,342

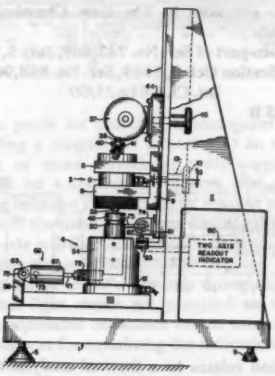
BEARING TORQUE TEST INSTRUMENTS

Keith M. Gordon, Munsonville, N.H., assignor to MPB Corporation, Keene, N.H.

Filed March 30, 1970, Ser. No. 23,948

Int. Cl. G01m *13/04*

U.S. Cl. 73—9 **16 Claims**



A bearing torque test instrument for measuring the torque transmitted to one race member of the test bearing from the other driven race member. The instrument comprises, generally, a vertically adjustable upper gas bearing assembly adapted to mate with and drive one race member of the test bearing over a full range of operating speeds, a lower gas bearing assembly supporting the other race member of the test bearing and a torque sensing system operatively connected to the other race member for measuring the running torque of the test bearing. The lower gas bearing assembly is supported for friction-free motion on a gas film which permits it to become automatically aligned with the upper gas bearing assembly so that the inner and outer race member of the test bearing are disposed in precise concentric alignment during testing.

3,685,343

APPARATUS FOR DETERMINING FLAMMABILITY

William H. Cochran, II, P.O. Box 32, Stonington, Conn.

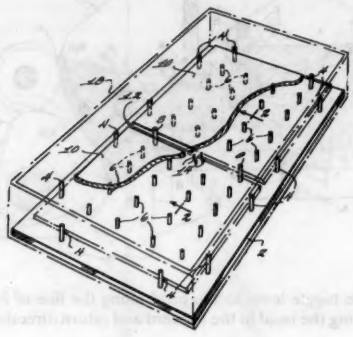
Filed April 28, 1970, Ser. No. 32,548

Int. Cl. G01n *25/00*

U.S. Cl. 73—15 R **3 Claims**

Apparatus for determining flammability of fabrics or other materials. The apparatus comprises a baseplate, means fixed

to the baseplate for positioning and supporting a plurality of specimens above the baseplate in a spaced relationship such as to provide a gap between the specimens extending transversely of the baseplate and means for holding specimen igniting means on the baseplate beneath the specimens and in alignment with the transverse gap.



3,685,344

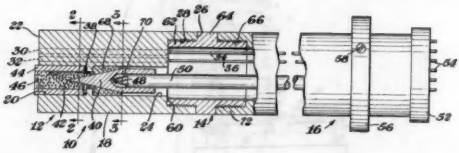
DIFFERENTIAL THERMAL ANALYSIS CELL ASSEMBLY

Franklin J. Karle, Midland, Mich., and Horst G. Langer, Wayland, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 742,869, July 5, 1968. This application Oct. 8, 1969, Ser. No. 868,968

Int. Cl. G01n *25/00*

U.S. Cl. 73—15 B **7 Claims**



This invention relates to a thermal analysis cell which is capable of supplying meaningful data in a high vacuum which is particularly useful for operations within a mass spectrometer or similar instrument which allows the heating of samples within the confinement of the mass spectrometer vacuum or within the ion source. The cell comprises a silver block to guarantee uniform heat throughout the cell. It is insulated against the push-through shaft by a section of boron nitride which is an excellent thermal insulator. The silver cell is equipped with temperature sensors to develop signals for temperature control purposes and for comparing the temperatures of the sample and reference cells. A sample well in the end of the silver block is designed to contain the sample. The sample itself is loaded into a glass or metal capillary and pushed into the well and unto a needle tipped temperature sensing assembly.

3,685,345

EQUILIBRATED SOIL-GAS SAMPLING

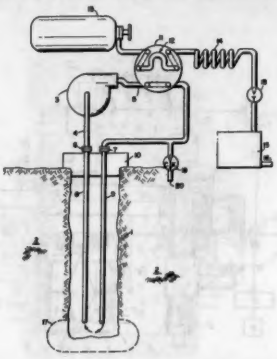
Harold L. Wise, 4522 Hummingbird, Houston, Tex.

Filed May 15, 1970, Ser. No. 37,607

Int. Cl. G01n *1/00, 31/00*

U.S. Cl. 73—19 **10 Claims**

The sampling of the concentration of a selected fluid in a subterranean earth formation is improved by circulating a fluid into repetitive contacts with the earth formation and measuring the concentration of the selected fluid in the circulating fluid when the concentration is at a level at which its rate of change is low relative to that exhibited in the initial stage of the fluid circulation.



3,685,346

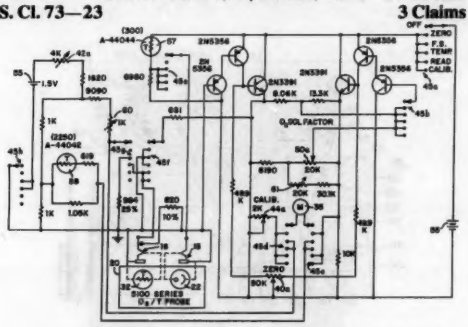
DIRECT READING QUANTITATIVE GAS MEASURING DEVICE

Everett W. Molloy, Yellow Springs, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

Filed Jan. 16, 1970, Ser. No. 3,323

Int. Cl. G01n *7/00;* **B01k** *3/00*

U.S. Cl. 73—23 **3 Claims**



A gas (oxygen) sensor measures the partial pressure of a gas in a mixed fluid (water and absorbed gases) and provides an output signal proportional to the partial pressure of the gas to which the sensor is exposed. An electronic amplifier receives this signal and drives a meter giving visual indication of the signal from the sensor. Prior to taking a reading with the device, a series of compensation steps are followed which change the meter indication with respect to the sensor output in order to compensate for changes in solubility of the gas in the fluid due to temperature differences, barometric pressure changes (with changes in altitude) and changes in the salinity of the fluid. When the reading is taken, the meter indicates directly the amount of gas (oxygen) present in the fluid in parts per million (PPM).

3,685,347

SQUIB SWITCH SIMULATOR

Floyd J. Hildebrant, Andover, and John J. Chovanec, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

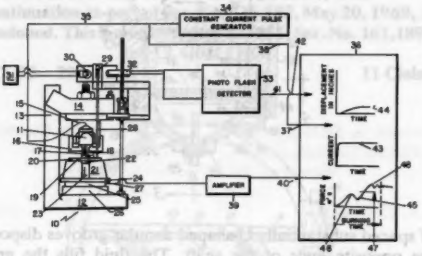
Filed Aug. 30, 1971, Ser. No. 175,848

Int. Cl. G01n *33/22*

U.S. Cl. 73—35 **8 Claims**

A squib switch testing apparatus for evaluating the switch parameters which includes a support stand for holding the

specimen switch assembly above an interface plate with the switch piston abutting the plate. A generally cylindrical rubber-like washer of a predetermined durometer hardness is interposed between the plate and a piezoelectric transducer. The washer is provided with a central aperture within which is disposed a teflon pin that extends from the transducer to just short of the upper washer surface. Carried by the plate and extending upwardly is a displacement rod which terminates in an optical end portion that includes a narrow lengthwise slit therein. On opposite sides of the slit there is positioned a source of illumination and a photo-detector response to the



quantities of light emanating from the source. Thus as the rod is depressed by the activation of the squib a quantity of light proportional to the displacement impinges on the detector whose output is applied to one channel of an oscilloscope. The squib is fired by a linear constant current pulse which is also applied to the scope. The downward movement of the squib piston initially compresses the washer while transmitting the force to the transducer and after this limited movement the pin provides for the force transmission. The transducer under displacement provides an electrical signal to the oscilloscope proportional to the force acting thereon. Thus in one operation the squib switch signature is determined and indicated.

3,685,348

METHOD AND APPARATUS FOR TESTING WELDING SEAMS BY ULTRASOUND ENERGY

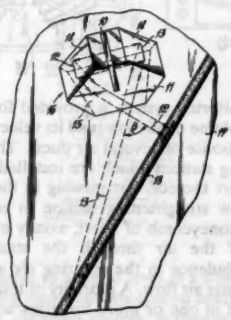
Wolfgang Botticher, Dortmund-Brackel; Hermann-Josef Kopineck, Dortmund-Kirchhorde; Karl-Heinz Schlusnus, Hamm, and Gernot Sommerkorn, Dortmund, all of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Dec. 22, 1969, Ser. No. 886,885

Claims priority, application Germany, Dec. 21, 1968, P 18 16 255.5

Int. Cl. G01n *24/04*

U.S. Cl. 73—67.8 R **8 Claims**



A method of and apparatus for non-destructively checking by means of ultrasonic energy the material of a workpiece, especially a welding seam, in its longitudinal and in its transverse direction as to faults in the heterogenity of the material to be checked, according to which at least two ultrasonic ray bundles are simultaneously directed through a common coupling surface into the material to be checked while one of said bundles is so directed that it hits the longitudinal axis of the material to be checked at a right angle thereto whereas the other one of ray bundles is directed so as to hit said longitudinal axis at an angle of less than 90°, e.g., 45° or 60°, the sound ray bundles reflected by the respective section of the material to be checked being recorded to register possible faults of said material.

3,685,349

Patent Not Issued For This Number

3,685,350

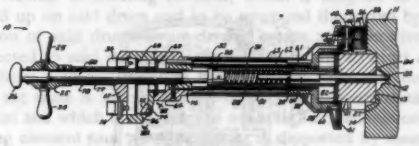
ULTRASONIC PROBE

Giuseppe Pettinato, Florence, Italy

Continuation of Ser. No. 743,650, July 10, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,267

Int. Cl. G01n *29/00*

U.S. Cl. 73—71.5 **2 Claims**



Ultrasonic probe for detecting inhomogeneities in railroad axles including a magnet for adhering to an end face of an axle. Three or more transducer units supported through elastic means on a transducer support, and a compression spring acting between the transducer support and the magnet to urge faces of the transducer units into angularly spaced portions of the axle end face. The transducer support is rotatable relative to the magnet through 360 degrees. An additional compression spring urges a pin into a centering hole of the axle. Indicator light means are provided on the transducer support and adjustable resistance means are provided on the transducer support for equalizing the indications produced by the transducers.

3,685,351

Patent Not Issued For This Number

3,685,352

COURSE-MADE-GOOD APPARATUS FOR SAILBOATS

Edwin Pounder, Sierra Madre, and John R. Casani, Altadena, both of Calif., assignors to Transdynamics, Inc., Burbank, Calif.

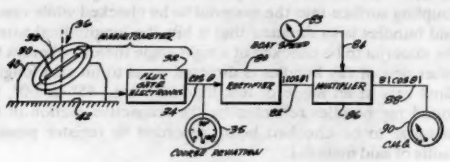
Filed Dec. 2, 1970, Ser. No. 94,278

Int. Cl. G01c *21/10, 23/00*

U.S. Cl. 73—178 R **15 Claims**

A sailboat measures and displays course-made-good information with the use of a gimbal-mounted magnetometer sensor for detecting the direction of the earth's magnetic field. The magnetically sensitive axis of the sensor is aligned with the earth's magnetic field when the boat is headed on a desired course, and the sensor is then locked in a fixed position relative to the boat, with the magnetometer thereafter producing a voltage which is proportional to the cosine of the angular deviation of the boat from the desired course. A voltage signal representing boat speed is coupled with the voltage from the magnetometer in a multiplier to produce a voltage propor-

tional to the vector component of the boat speed in the direction of the desired course. The voltage from the magnetometer sensor is fed to a meter to display the angular deviation of the boat from the desired course, and the voltage from the multiplier is fed to a meter to display the boat's velocity vector component in the direction of the desired course.



3,685,353

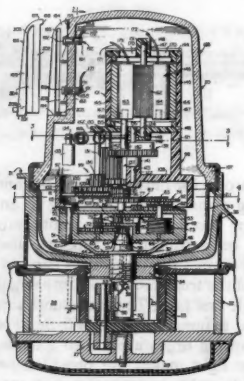
SELF GENERATING REMOTE READER REGISTER

David J. Gestler, Trafford; Zoltan Kovats, Pittsburgh, and Alfred W. Kolakowski, Clarksburg, all of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed May 6, 1969, Ser. No. 822,246

Int. Cl. G01f *15/06*; H02k *33/02*

U.S. Cl. 73—194 E **13 Claims**



A meter register readable at the meter site and including gearing driving a fractional measurement indicator and an impulse generator transmitting electrical pulse currents for energizing a remote reader. The register as a whole is an assembly capable of ready assembly and disassembly from the meter as a unit and is composed of a separable primary register gear train assembly unit including a compound units counter output drive gear drive connected to a digital counter units indicator wheel and a separable auxiliary gear train assembly unit including a fractional measurement indicator and a low speed output drive gear, and a separable impulse generator assembly unit drive connected to the auxiliary gear train assembly output drive gear through an output drive gear pin and a generator cam type drive wheel reversibly spring driven at high speed to generate electrical pulses for energizing a remote reader.

3,685,354

FLOW INDICATOR DEVICE HAVING PRESSURE BALANCED SEALING SHAFT

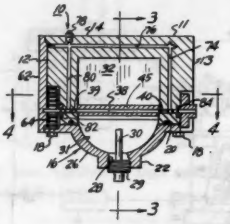
Nils O. Rosaen, 3774 Quarton Rd., Bloomfield Hills, Mich.

Continuation-in-part of Ser. No. 50,651, June 29, 1970. This application March 2, 1971, Ser. No. 120,270

Int. Cl. G01f *1/00*

U.S. Cl. 73—228 **6 Claims**

A flow indicator device especially suitable for high pressure applications and having a housing with inlet and outlet ports respectively adapted to be connected with a source of fluid pressure and a fluid user. A semi-circular vane member mounted within the housing is movable in response to a change in the flow rate between the inlet and outlet ports to rotate a shaft to which the vane member is attached. The shaft, in turn, extends externally of the housing and is operatively coupled to an indicator for providing an external visual indication of the rate of flow through the device. The shaft is rotatably mounted in a pair of axially aligned bores in the housing in a balanced fluid sealing relationship by a plurality of spaced substantially U-shaped annular grooves disposed at the opposite ends of the shaft. The fluid fills the grooves around the shaft and provides a continuous film of fluid around the shaft to prevent the shaft from binding when the shaft rotates under the force of the vane member. This permits the shaft to be made to fit more tightly in the housing and thus provides an assembly in which the shaft itself provides the major sealing function. Fluid conduits are provided downstream from the grooves for communicating any fluid leakage along the shaft to a common drain.



3,685,355

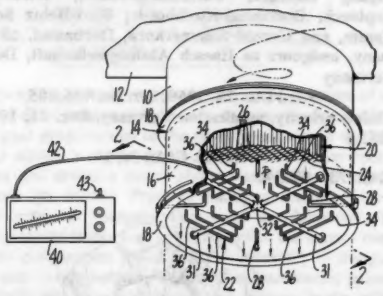
AIR MONITORING SYSTEM

Kenneth W. DeBaun, Novato, Calif., assignor to Air Monitor Corporation, Santa Rosa, Calif.

Filed April 13, 1970, Ser. No. 27,758

Int. Cl. G01f *1/00*

U.S. Cl. 73—212 **10 Claims**



An air monitoring system is provided for direct measurement of the volume of air flow, and its velocity and pressure in one or a composite of several air ducts. The system includes flow measuring stations which are installed in each duct as a permanent part thereof. Air moving in the duct first passes through a flow straightening section in each station which comprises a honeycomb of short, axially extending passages. Movement of the air through the straightening section eliminates turbulence in the entering air and produces substantially laminar air flow. A plurality of total pressure sensors are positioned in one or more traverses across, immediately adjacent to, and downstream of the straightening section to sense the total pressure of the flowing air. The total pressure values sensed by the several sensors are averaged by a manifold which connects with each of them. The individual

total pressure sensors are so distributed as to be at the center of cross-sectional segments of the duct having equal areas. Static pressure at each station is also sensed by static pressure sensing tips, averaged and used with the total pressure to determine air flow. A tube leading directly from a remotely located manometer is connected to the manifold of the total pressure sensors at a point symmetrically arranged with respect to the total pressure sensors.

3,685,356

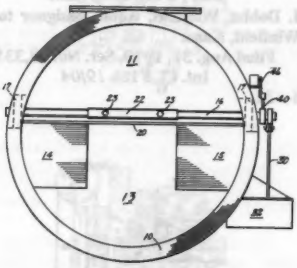
GRANULAR SOLIDS INDICATOR FOR VERTICAL VESSELS

Robert V. Zimmerman, 10655 Tancred, Denver, Colo.

Continuation-in-part of Ser. No. 826,182, May 20, 1969, abandoned. This application July 9, 1971, Ser. No. 161,189

Int. Cl. G01f *23/00*

U.S. Cl. 73—290 **11 Claims**



A level indicator for granular solids contained in vertical vessels includes a feeler arm which is arranged to ride on the side of a conical pile of granular solids, moving with the level changes of the pile of granular solids. A motion transmitter attached to the feeler arm transfers movement of the feeler arm to an indicator and/or control means for the pile of granular solids.

3,685,357

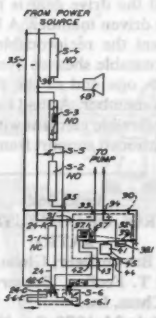
SENSOR RESPONSIVE TO LIQUID LEVEL

Alexander W. Alexander, 1108 Kinloch Lane, North Vancouver, British Columbia, Canada

Filed Jan. 26, 1970, Ser. No. 5,561

Int. Cl. G01f *23/12*

U.S. Cl. 73—313 **4 Claims**



A sensor responsive to a liquid level in a container wherein a sealed tube having longitudinally spaced apart, magnetically actuated switches, enclosed therein, is disposed vertically of the container. The switches are actuated by a magnetic float sensitive to changes in liquid level slidably mounted on the tube for vertical movement.

3,685,358

APPARATUS FOR INDICATING THE RISE OF LIQUID IN A MOLD

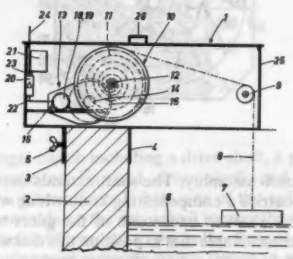
Franz Hubner, and Walter Jilek, both of Linz, Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed June 17, 1970, Ser. No. 46,917

Claims priority, application Austria, June 18, 1969, A 5750/69

Int. Cl. G01f *23/10*

U.S. Cl. 73—321 **11 Claims**



A refractory float is adapted to float on liquid metal in a mold and is connected to a rotatably mounted winding drum by a flexible connecting element, which is adapted to be wound up on said drum and to be unwound therefrom by a rotation of said drum. Drum-driving means are operatively connected to said drum and arranged normally to exert on said drum a torque which is insufficient to raise said float when the same is supported only by said flexible connecting element and which is sufficient to maintain said flexible connecting element taut when said float is supported by means other than said flexible connecting element. A transducer is provided as well as means operatively connecting the transducer to the drum. The transducer is operable to produce an electric output signal in response to an angular movement of said drum. Signal-utilizing means are connected to said transducer and responsive to said output signal.

3,685,359

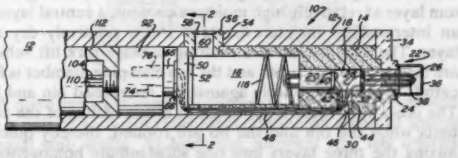
EXPENDABLE LANCE

Joseph Boron, Doylestown, Pa., and Marvin J. Lowdermilk, Haddonfield, N.J., assignors to Electro-Nite Engineering Co., Philadelphia, Pa.

Filed May 11, 1967, Ser. No. 637,687

Int. Cl. G01n *25/06;* **G01k** *13/12*

U.S. Cl. 73—354 **15 Claims**



An expendable lance is provided which is adapted to be inserted into a bath of molten metal to ascertain the temperature of the molten metal, detect phase change, and to retrieve a sample of the bath.

3,685,360

ADJUSTMENT MECHANISM FOR CABIN ALTIMETER ROTATABLE LIGHT HEAD

Jerry L. Raznov, Philadelphia, Pa., assignor to Ametek, Inc., New York, N.Y.

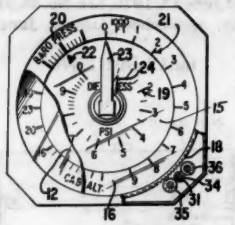
Filed Aug. 28, 1970, Ser. No. 67,793

Int. Cl. G01l *7/12*

U.S. Cl. 73—387 **4 Claims**

A dual transilluminated cabin altimeter and differential pressure indicator is provided with an altimeter dial which is

rotatably mounted with respect to a fixed reference "bug" in order to compensate for variations in local air density. The movable dial is provided with a ring gear around its peripheral edge engageable by one of two pinion gears mounted on the ends of a yoke carried on a pivotally mounted shaft of a compensating knob assembly. The shaft extends outwardly of the casing and carries a compensating knob which when actuated will pivot the shaft to cause one of the gears to engage the gearing on the movable dial to position this dial with respect to the fixed reference "bug" or reference mark.



3,685,361

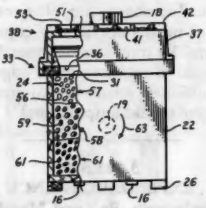
BIN TURNING MIXER

Martin Tomasovich, 10904 Metteer Rd., Live Oak, Calif.

Filed Aug. 3, 1970, Ser. No. 60,241

Int. Cl. B01f 9/02; G01n 1/04

U.S. Cl. 73—421 B **3 Claims**



A bin for mixing articles of fruit therein by turning the bin over and over. A square lid has depending walls with a sealing gasket on the lower edges of the four walls. The lid is placed with the gasketed walls in registry with the upper edges of a fruit handling bin containing prunes, or the like, having a bottom layer at relatively high moisture content, a central layer at an intermediate moisture content and a relatively dry top layer. The lifting forks of a rotating carriage fork lift vehicle are inserted under the bin and the bin clamping member is forcefully urged downwardly against the interposed bin and lid. The downward force is sufficient to effect sealing of the contents while the bin and the lid are rotated, thereby quickly mixing the three layers into one substantially homogeneous mass. The lid provides extra space so that the articles of fruit will more readily roll around to promote mixing. Means are provided in the lid for removing samples of fruit during the mixing process.

3,685,362

CHAIN FOR CHAIN TRANSMISSION

Vladimir Viktorovich Usov, ulitsa Sotsialisticheskaya, 29a, kv. 29, Zernograd Rostovskoi oblasti, and Lev Konstantinovich Shinevsky, ulitsa Lenina, 97, Krasnodar, both of U.S.S.R.

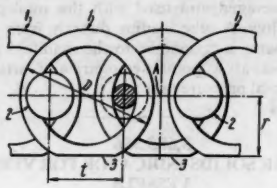
Filed Sept. 30, 1970, Ser. No. 76,701

Claims priority, application U.S.S.R., Oct. 6, 1969, 1367166

Int. Cl. F16g 13/02

U.S. Cl. 74—253 R **8 Claims**

A chain for a chain transmission in which the chain links consist of rings connected through rollers. The chain needs no lubrication and successively operates under conditions when the linear velocity of its links exceeds 4 m/sec.



3,685,363

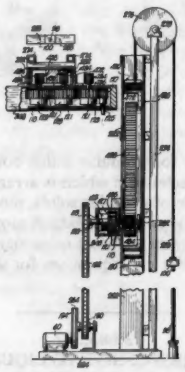
DRIVE MECHANISM

Richard H. Dobbs, Winfield, Kans., assignor to Harriette E. Dobbs, Winfield, Kans.

Filed Aug. 31, 1970, Ser. No. 68,331

Int. Cl. F16h 19/04

U.S. Cl. 74—31 **6 Claims**



A reciprocable member provided with a continuous gear track is driven over a rectilinear path of travel by a single reciprocable drive gear which is in mesh with the gear track or a pair of drive gears on opposite sides of the track. The driven member is restrained by guide means for movement along a rectilinear path, and the drive gear is rotatable to effect the reciprocation of the driven member. A load-supporting frame is positioned adjacent the reciprocable driven member and supports a pair of rotatable sheaves over which a flexible element is trained with one end of the flexible element being joined to the driven member. A load can thus be attached to the other end of the flexible element with its weight being carried by the aforementioned support frame.

3,685,364

CAM FOR CONTROL OF COMBUSTION FUEL-TO-AIR RATIO

Joseph L. Turecek, Brown Deer; Glenn D. Craig, Menomonee Falls, and David T. Feuling, Beaver Dam, all of Wis., assignors to Aqua-Chem, Inc.

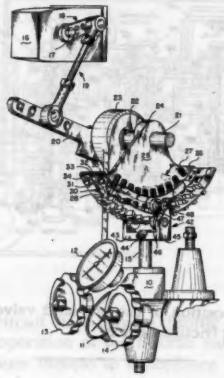
Filed July 24, 1970, Ser. No. 57,985

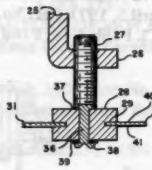
Int. Cl. F16h 53/00

U.S. Cl. 74—55 **4 Claims**

Optimum fuel-to-air ratio over the entire operating range of a boiler fuel burner is obtained by having a motor, which is driven in response to boiler temperature or pressure changes, operate a damper and fuel valves simultaneously. A cam and follower reposition the fuel valves coordinately with a directly

driven damper. Means are provided to adjust the cam contour over its length so optimum fuel-to-air ratios prevail for all





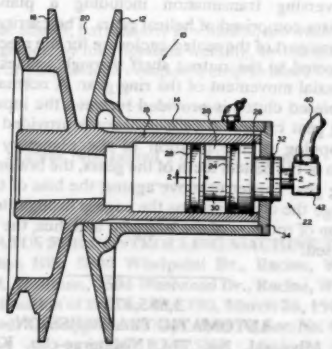
position . the damper. The follower is positively engaged with th. .am.

3,685,365

VARIABLE SPEED PISTON-SWIVEL COMBINATION

James J. Bauer, Lisbon, N. Dak., assignor to Clark Equipment Company

Filed June 29, 1970, Ser. No. 50,615
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 F **6 Claims**



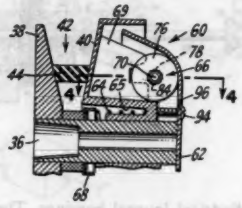
A variable sheave and swivel joint combination including first and second sheave members and a piston slidably disposed in a tubular portion of the first sheave member. The piston is connected to the second sheave by a piston rod which includes a bore in which the swivel joint is substantially entirely disposed.

3,685,366

RACING CENTRIFUGAL CLUTCH ASSEMBLY

Fred A. Schupan, York, Pa., assignor to AMF Incorporated

Filed Aug. 26, 1970, Ser. No. 67,147
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **7 Claims**



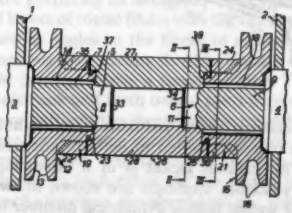
In a centrifugal clutch including a drive shaft, a pair of pulley flanges mounted on said drive shaft and providing therebetween a groove for a V-belt, one of the pulley flanges being axially movable on the drive shaft to vary the radial position of the V-belt with respect to the pulley flanges, apparatus for axially moving said movable pulley flange in response to the angular velocity of the drive shaft, comprising a cam ramp fixedly mounted to said drive shaft in spaced relationship with the side of the movable pulley flange, said cam ramp including a portion curved toward said movable pulley flange, a centrifugal weight mounted for radial movement with respect to said movable pulley flange and said cam ramp, and means for inhibiting the radial movement of said centrifugal weight until a predetermined drive shaft angular velocity is reached.

3,685,367

CHAIN CONVEYOR DRIVE SPROCKET ASSEMBLIES

Gordon Bertram Dawson, Worcester, England, assignor to Dowty Meco Limited, Worcester, England

Filed Nov. 24, 1970, Ser. No. 92,458
Claims priorty, application Great Britain, Dec. 13, 1969 60,897/69
Int. Cl. F16h *55/30;* **B60b** *27/06;* **F16d** *1/06*
U.S. Cl. 74—243 C **8 Claims**



A drive sprocket assembly for use in a chain conveyor having a pair of sprocket rings for mounting on a pair of spaced coaxial stub shafts. At least one sprocket ring has internal spline or key means so that it makes driving engagement with its associated stub shaft. A spacer member, having dogs or the like to engage both sprocket rings is located between both rings.

3,685,368

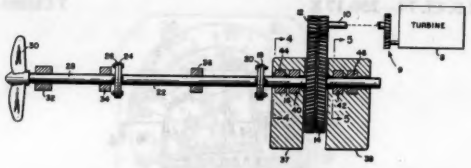
BEARING SYSTEM FOR MINIMIZING SHAFT TILTING

Frederic A. Thoma, Harbourton, N.J., assignor to De Laval Turbine Inc., Trenton, N.J.

Filed Feb. 9, 1971, Ser. No. 114,007
Int. Cl. F16h *57/00;* **B63b** *35/30*
U.S. Cl. 74—410 **5 Claims**

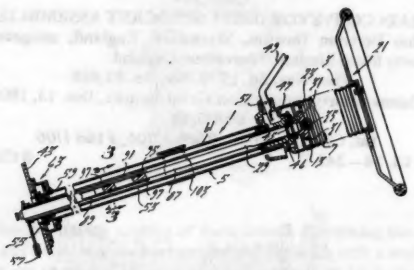
In order to reduce the tilting of the section of a ship's shafting system which carries the main drive gear and thereby improve the load distribution between meshing gear teeth, a bearing system is provided comprising a pair of ordinary cylin-

drical journal bearings, one on either side of the main drive gear, and a pair of additional bearings, each located next to



one of the cylindrical journal bearings. The latter bearings serve to provide a spring scale in the horizontal direction sufficient to reduce tilting of the main gear shaft section.

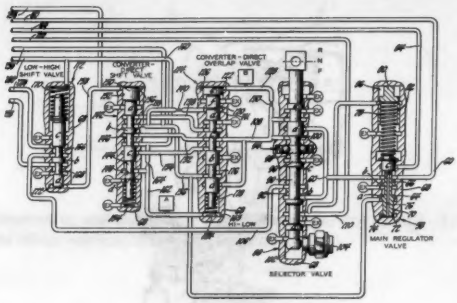
3,685,369
STEERING COLUMN
Don Adams, III, Ferndale, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Continuation of Ser. No. 886,535, Dec. 19, 1969, abandoned. This application Nov. 15, 1971, Ser. No. 199,070
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **2 Claims**



Steering column having yieldable members at the upper and lower ends thereof adapted to deform independently of one another. The column jacket is of a noncollapsible nature, while the yieldable members are shown in two forms, one being a thin walled hollow cylindrical member having a series of individual annual convolutions therein, and the other being a pair of mating telescoping steering shaft members.

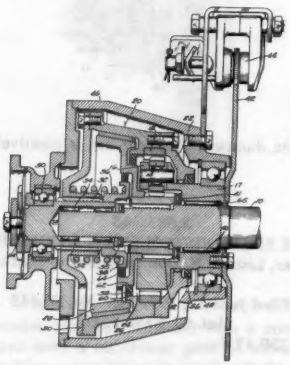
3,685,370
TRANSMISSION CONTROL HAVING A SHIFT OVERLAP VALVE
Michael F. King, Brownsburg, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed June 29, 1970, Ser. No. 50,540
Int. Cl. B60k *21/02*; F16h *47/08, 45/00*
U.S. Cl. 74—645 **7 Claims**

A transmission control system having shift valves for controlling the interchange of friction devices which control the transmission drive ratios. One shift valve cooperates with an overlap valve to control the overlap time during interchange of two of the friction devices. The first shift valve and the overlap valve also prevent shifting of a second shift valve until the first shift is completed. An electrical solenoid associated with one shift valve and the overlap valve controls the overlap time. A second electrical solenoid associated with the overlap valve is operable to maintain one friction device engaged irre-



gardless of the position of the one shift valve or the engagement of the other friction device.

3,685,371
REVERSING TRANSMISSION
James W. Crooks, 4973 N. Larkin St., Milwaukee, Wis.
Filed April 5, 1971, Ser. No. 131,010
Int. Cl. F16h *3/44*; F16d *67/02*
U.S. Cl. 74—792 **10 Claims**

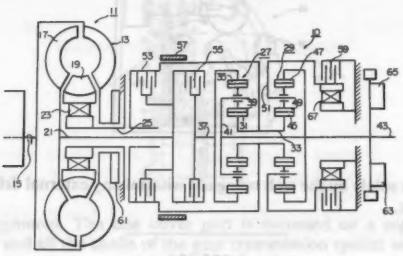


A reversing transmission including a planetary gear mechanism comprised of helical gears. The carrier of the ring gear forms part of the sealed enclosure for the mechanism and is connected to the output shaft through splines to thereby permit axial movement of the ring gear. A normally engaged spring biased clutch is provided between the input shaft and the ring gear carrier. A caliper brake is provided for braking and stopping of the rotation of the planetary gear cage. Because of the helical teeth of the gears, the braking will cause the ring gear carrier to move against the bias of the spring to disengage the clutch and, as the cage is brought to a stop, the direction of rotation of the ring gear and thus, the output shaft is reversed.

3,685,372
AUTOMATIC TRANSMISSION
Toshio Miyazaki, No. 714, Nishiterao-cho, Kanagawa-ku, Yokohama, Japan, assignor to Nisson Motor Company, Ltd., Yokohama, Japan
Filed May 19, 1970, Ser. No. 38,848
Int. Cl. B60k *21/00*; F17d *1/00*
U.S. Cl. 74—863 **3 Claims**

Automatic multi-ratio transmission control system offering powerful braking on the engine at an early stage of decelera-

tion and smoothing the transition from the low speed ratio to the intermediate speed ratio. The control system includes a throttle vacuum sensitive valve for controlling the throttle



pressure in the circuit thereof and a throttle backup valve for controlling the operation of the throttle valve by furnishing modulated pressure thereto in accordance with the driving conditions selected.

3,685,373

MANUFACTURE OF SAW BLADES

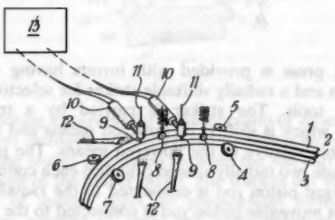
Cyril Leslie Norfolk, Enox House, Faraday Rd., Crawley, England

Filed Nov. 2, 1970, Ser. No. 86,064

Claims priority, application Great Britain, Nov. 12, 1969, 55,433/69

Int. Cl. B23d *63/00*

U.S. Cl. 76—112 **9 Claims**



Bimetallic blades, particularly saw blades, are made by edge welding together, by microplasma welding, two strips of steel, and converting the welded composite strip to blade form.

3,685,374

Patent Not Issued For This Number

3,685,375

APPARATUS FOR CONTROLLING MACHINE TOOLS

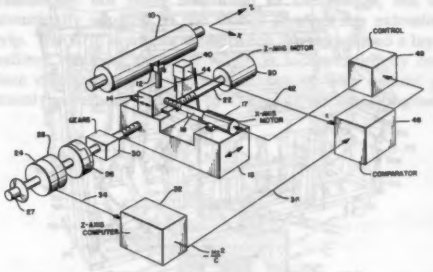
Roger Gettys Hill, 5000 Windpoint Dr., Racine, Wis., and George A. Hoffman, 2606 Westwood Dr., Racine, Wis.

Continuation of Ser. No. 716,193, March 26, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,907

Int. Cl. B23b *5/08*

U.S. Cl. 82—11 **6 Claims**

Apparatus for use in controlling the position of a tool relative to a workpiece for the purpose of machining a crowned roll, comprises motor control means for causing relative movement between the tool and roll with respect to a cross axis perpendicular to the longitudinal axis of the roll such that the position of the tool relative to the roll as measured along the cross axis is equal to Hz^2/C, where z represents the tool position relative to the roll as measured along its longitudinal



axis, and H and C are constants which determine, respectively, the arc height and arc length of the crown.

3,685,376

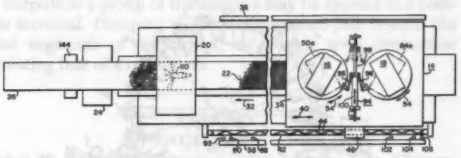
APPARATUS FOR MAKING A LAMINATED FIBROUS STRIP

Samson P. Levine; Ralph W. Kugler, and Anthony J. Candek, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1970, Ser. No. 100,683

Int. Cl. B65h *35/08*

U.S. Cl. 83—87 **4 Claims**



A system for preparing an elongated laminated strip having a plurality of layers of metal fibers with the fibers of each layer being disposed at angles to the fibers of adjacent layers, including at least two fiber cutting shredders which are mounted on a movable carriage above a conveyor belt. The movable carriage travels back and forth over a short segment of travel of the conveyor belt and the shredders are rotatably mounted on the carriage for dropping successive layers of metal fibers onto the conveyor belt with the fibers of each layer being disposed at angles to each other. At the end of travel of the carriage in each direction the shredders are rotated to different angles and the belt simultaneously moves a short increment of travel, whereby a continuous multiple layered strip of metal fibers is produced. At another work station on the belt an adhesive binder is applied to the strip so that upon leaving the belt the strip may be wound upon a reel for storage and handling.

3,685,377

MACHINE FOR CUTTING CONTOUR

Merrill V. Peck, Belmont; Edwin P. Thompson, Comstock Park; William F. Thompson, Rockford, and Robert M. Peck, Sparta, all of Mich., assignors to Frank Edge Saw Manufacturing Company, Grand Rapids, Mich.

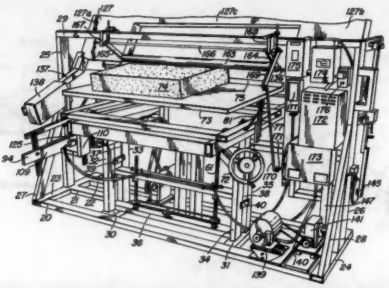
Filed Feb. 3, 1971, Ser. No. 112,340

Int. Cl. B26d *1/46;* **B27b** *13/04*

U.S. Cl. 83—210 **9 Claims**

A machine for cutting contour on a workpiece supported by a table mounted for movement to bring the work piece into engagement with a cutting member. The table is tilted on a

carrier by a cam system as a function of the lateral position of the carrier along a guideway, with the movement of the carrier



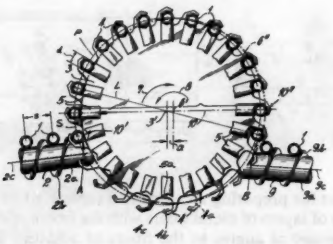
preferrably coordinated with the movement of the cutting element.

3,685,378

APPARATUS FOR THE CUTTING OF ELONGATED MEMBERS

Karl Ehm, Pfalzerweg 12a, and Hermann Vollmecke, both of 4330 Mulheim/Ruhr, Germany, assignors to said Ehm by said Vollmecke

Filed Sept. 28, 1970, Ser. No. 76,010
Int. Cl. B26d *7/06*
U.S. Cl. 83—411 **6 Claims**



Elongated members, e.g., pipes arriving in succession upon transport device, are subdivided longitudinally at a cutting station by being entrained along a rotary (circular) path intersected by the path of a sawblade, the center of rotation of which lies within the periphery of the circular path but which intersects the latter. The elongated members are retained by clamping devices while they engage the sawblade, the clamping devices releasing the severed portions for further displacement away from the cutting station.

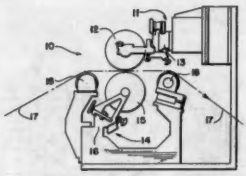
3,685,379

SLITTER BLADE MOUNTING ASSEMBLY

Kenneth G. Frye; Robert G. Lucas, both of Downingtown, Pa., and Soma M. Rohosy, Sterling Forest, N.Y., assignors to Beloit Corporation, Beloit, Wis.

Filed Dec. 16, 1969, Ser. No. 885,444
Int. Cl. B26d *1/16, 1/24*
U.S. Cl. 83—482 **12 Claims**

A web slitter assembly of the type including a pair of rotating engaging slitter blades between which passes the web to be cut. The assembly includes a low friction blade mounting and special devices for accurately positioning the blades for cutting and loading the blades against each other. The accuracy of the positioning and loading is such that the blades can be



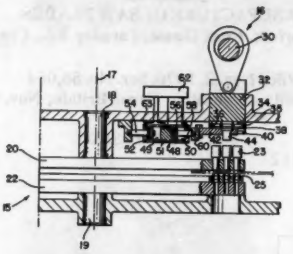
driven solely by the web being cut without any external driving source.

3,685,380

MULTI-TRACK TURRET AND OVERLOAD PROTECTION

Dennis Daniels, Williamsville, N.Y., assignor to U.S. Amada, Ltd., Seattle, Wash.

Filed Feb. 19, 1971, Ser. No. 113,043
Int. Cl. B26d *5/08*
U.S. Cl. 83—552 **5 Claims**



A punch press is provided with turrets having radially spaced tools and a radially shiftable striker for selectively engaging the tools. The striker is carried by a transport mechanism which is shifted by powered means and is vertically slideable relative to the powered means. The powered means include two radially spaced cylinders each containing a piston. A fixed piston rod is connected to the radially inner piston and a moveable piston rod is connected to the radially outer piston and to the transport means. Accurate positioning of the striker is obtained by controlling the relative positions of the pistons and cylinders. The transport means holds the striker for free relative upward movement. A shear plate is positioned over the striker and a backup plate is positioned over the shear plate. The backup plate contains openings for receiving a slug cut from the shear plate by the striker to relieve the striker when overloaded.

3,685,381

Patent Not Issued For This Number

3,685,382

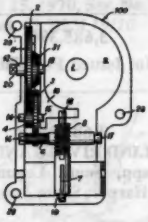
DRIVE UNIT FOR A MUSIC BOX

Emile Charles Matthey, CH 1445 Vuiteboeuf, Buiteboeuf, Switzerland

Continuation-in-part of Ser. No. 768,783, Oct. 18, 1968, abandoned. This application Sept. 29, 1970, Ser. No. 76,441
Int. Cl. G10f *1/06*
U.S. Cl. 84—95 **5 Claims**

A music box includes interconnected cover parts which define a hollow case for housing a drive unit, the drive unit includes a gear transmission system having shafts with gears fix-

edly mounted thereon in meshing relationship. A plurality of slots are provided in one cover part for supporting the shafts and the other cover part has a plurality of complementary projections which extend into the slots for maintaining the shafts



in alignment. The one cover part is mounted on a support plate and all the shafts of the gear transmission system are arranged in planes parallel to the plane of the support plate to facilitate assembly of the music box.

3,685,383

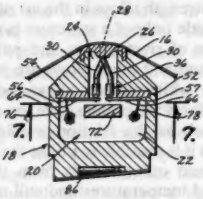
SWITCHING APPARATUS FOR A PLAYER PIANO

Richard L. Cannon, and Leonard R. D. Smith, both of Yankton, S. Dak., assignors to Dale Electronics, Inc., Columbus, Nebr.

Continuation-in-part of Ser. No. 648,311, June 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 503,043, Oct. 23, 1965, abandoned. This application June 13, 1969, Ser. No. 833,132

Int. Cl. G10f *5/04*

U.S. Cl. 84—160 **6 Claims**



A switching apparatus for a player piano or other keyboard instrument including an elongated extrusion which supports a tracker bar means positioned between the roll carrier and the take-up roll of the player piano. The tracker bar means has a plurality of spaced apart air passageways formed therein which are adapted to sense the perforations in the sheet material passing thereover. Each of the ports have a conduit means communicating their width and extending therefrom. One embodiment of the invention includes a bellows type element on the nipple which expands to close a switch when the respective air passageway registers with a perforation in the sheet material. Another embodiment of the invention includes a movable capsule at the end of the nipple which moves to close a switch when the respective air passageway registers with a perforation in the sheet material. The switches are electrically connected to a solenoid and activates the same when the switch means is closed by the expansion of the element on the conduit means. The extrusion supports the tracker bar means, circuit board, terminal bar and electrical leads.

3,685,384

ELECTROPIANO

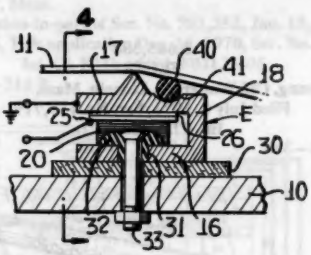
Daniel W. Martin, and John L. Stein, both of c/o D. H. Baldwin Co., 1801 Gilbert Ave., Cincinnati, Ohio

Division of Ser. No. 714,888, March 21, 1968, Pat. No. 3,519,721. This application Dec. 18, 1969, Ser. No. 889,809

Int. Cl. G10c *3/04*

U.S. Cl. 84—211 **14 Claims**

An electropiano employing as a transducer rail one or relatively few strips of U-shaped aluminum extrusion between the arms of which are located a plurality of piezo-electric transducer elements separated from one arm by resilient damping pads located above metallic shims. The total number of transducer elements is about 25 percent of the number of tones, the transducers not being individual to the strings, but being acoustically coupled to the strings through the extrusion or strip. The strip is supported between the strings and a layer of resilient damping material which is located directly on the plate of the electropiano, and is secured only against gross lateral movement relative to the plate so that longitudinal



acoustic vibrations along the length of the strip and flexural vibrations of the extrusion can occur. The transducer elements each have one electrode contacting an arm of the extrusion, which then provides a common electrical ground. The other electrode of each transducer contacts a conducting shim superposed on an electrical insulating and acoustical damping pad. These shims are connected to a common lead, so that all the outputs of a group of transducers may be applied to a common terminal. Damping means are provided just beyond the tuned segments of the strings, to provide tone diminution simulating that of a true piano.

3,685,385

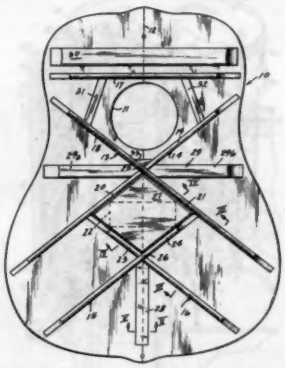
GUITAR

Stanley E. Rendell, Kalamazoo, Mich., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.

Filed June 22, 1971, Ser. No. 155,554

Int. Cl. G10d *1/08, 3/00*

U.S. Cl. 84—267 **13 Claims**



The top of a guitar body is provided on its underside with two pairs of braces, arranged as crosses, and a transverse brace. In addition, there are two transverse thin wood strips and a longitudinal wood strip, the grain of which strips extends transversely to the grain of the top.

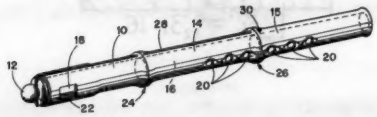
3,685,386
Patent Not Issued For This Number

3,685,387
Patent Not Issued For This Number

3,685,388
FLUTE

Niels O. Young, Old Winter St., Lincoln, Mass.

Filed July 6, 1971, Ser. No. 159,719
Int. Cl. G10d 7/02
U.S. Cl. 84—384 11 Claims

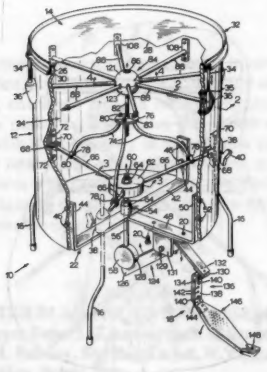


A flute of improved construction which offers a full sound rich in harmonic content throughout the playing range, and which can be readily assembled and disassembled. The flute employs a turbulator in operative arrangement with respect to the embouchure hole to provide more turbulent flow to enhance the harmonic content and thus the tone quality of the emitted sound. The bore is of non-uniform configuration to further enhance tone quality. The flute can be formed in sections which are secured in assembled form by a tensioned cord interconnecting the several sections, and which when released permits disassembly of the instrument for ease of transportation and cleaning.

3,685,389
DRUM

Franklin Theodore Bemben, Moonstone, Ontario, Canada

Filed Aug. 20, 1970, Ser. No. 65,441
Int. Cl. G10d 13/02
U.S. Cl. 84—411 2 Claims



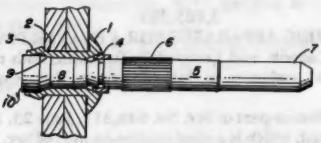
An adjustable pitch musical drum is provided which includes a tubular cylindrical casing having its axis vertical, and a conventional drum head in tension over another end of the casing. A plurality of legs support the casing off the floor and a foot pedal is provided below the casing for adjusting the tension in the drum head. A tensioning mechanism connects the pedal to the drum head so that a relatively large movement of the pedal results in a small tensioning movement at the drum head to vary the frequency and hence the pitch of the note produced by the drum.

3,685,390
Patent Not Issued For This Number

3,685,391
MULTIMETAL BLIND RIVETS AND PULLING STEMS

Roland Howard Gapp, South Laguna; Marcos Alazraki, Orange, and John Harper, Santa Ana, all of Calif., assignors to Textron, Inc.

Continuation-in-part of Ser. No. 740,811, May 31, 1968, abandoned. This application Feb. 16, 1970, Ser. No. 11,771
Int. Cl. F16b 19/10
U.S. Cl. 85—77 2 Claims

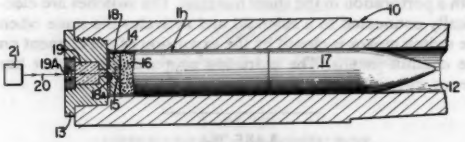


The use of high strength alloys in the art of blind riveting or riveting from one side only of a structure is made possible by novel combinations of rivet bodies and pulling stems. Pure titanium and titanium and other alloys are joined together to form the rivet body, while titanium alloys and other metals are joined together to form the pulling stem, by use of an integral joining process such as the friction welding process. With these combinations it is possible to utilize the great advantages of special alloys and other metals from the standpoint of strength at elevated temperatures and still make possible the formation of blind rivet heads. Similarly the fastening or plug section of the pulling stem is made of a different metal from the metal of the pulling section and is provided with a breakneck usual in the art of blind rivets and lockbolts.

3,685,392
LASER IGNITION SYSTEM

William G. Platt, Stratford, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Feb. 12, 1970, Ser. No. 10,817
Int. Cl. F41f 13/08; F41c 19/12
U.S. Cl. 89—28 9 Claims



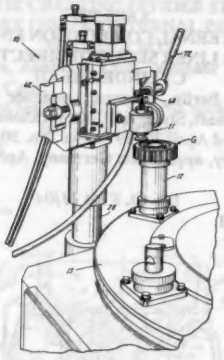
A device for firing ammunition has a chamber in which the propellant is placed, the chamber communicating with a barrel or guide through which is projectile or missile is propelled by the propellant when it is ignited, there being a window through which laser radiation can be directed onto the propellant in the chamber, the window pressure sealing the chamber when the chamber is closed.

3,685,393

DEVICE FOR SMOOTHING IRREGULARITIES

Ramsay M. Bell, Schoolcraft, Mich., assignor to Hammond Machinery Builders, Inc., Kalamazoo, Mich.

Filed April 15, 1970, Ser. No. 28,856
Int. Cl. B23f *19/10*
U.S. Cl. 90—1.4 18 Claims



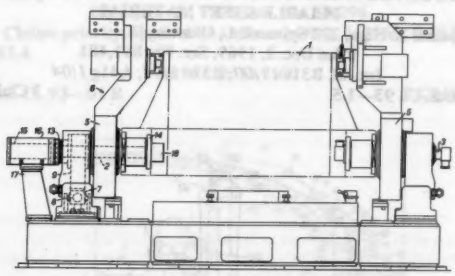
A device for smoothing or removing irregularities, such as burrs, from a workpiece, such as a gear. A rotary cutting or skiving tool is first moved by an axially directed movement into contact with the surface on which a deburring operation is to be performed and is then moved in a cutting manner along, and relative to, said surface. The cutting tool is mounted for free rotation about its axis and said axis is adjustable to a position perpendicular to said surface. Preferably said cutter is mounted upon a post suitably supported in a fixed position relative to the machine. Suitable means are provided for effecting the axial and radial movement of the cutter as desired, and same may conveniently be driven by rotation of the workpiece against whose surface the cutter bears. One or more brushes may then be caused to operate against said surface to complete the deburring operation.

3,685,394

MACHINE TOOLS

James Arthur Smith, 11, Green View Close, Bovingdon, England

Filed April 1, 1970, Ser. No. 24,623
Int. Cl. B23d *41/02*
U.S. Cl. 90—89 1 Claim



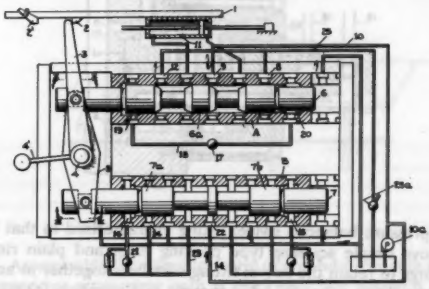
In a machine tool having a pivotally mounted work fixture, the hydraulically actuated work-positioning and clamping devices on the fixture are supplied with operating fluid through the pivot shaft at one end of the fixture via a fixed manifold surrounding the pivot shaft and connected to a supply source, and a rotatable manifold secured to the pivot shaft and connected to the individual devices on the work fixture, each manifold having a similar number of fluid passages and each fluid passage in one manifold being connected to a separate one of the fluid passages in the other manifold by one of a number of individual passages extending through the pivot shaft.

3,685,395

CONTROL SYSTEM FOR A HYDRAULIC MOTOR

Bruno E. Straub, and William H. Grotewold, both of Worcester, Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Continuation-in-part of Ser. No. 791,352, Jan. 15, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,955
Int. Cl. F01b *15/00*; F01l *25/06*
U.S. Cl. 91—216 B 8 Claims



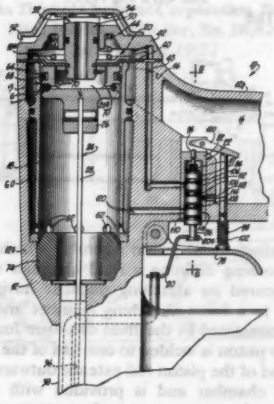
The present invention relates to a hydraulic system and, more particularly, to a system for reciprocating a machine tool table or the like, including a cylinder, a main control valve, and a pilot valve, all operatively connected together.

3,685,396

FASTENER DRIVING TOOL

Allen R. Obergfell, Park Ridge, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

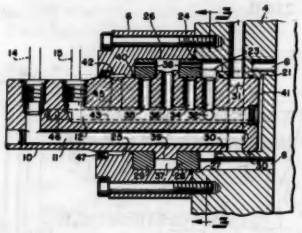
Continuation of Ser. No. 767,020, Aug. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 602,991, Dec. 19, 1966, abandoned. This application June 15, 1970, Ser. No. 48,867
Int. Cl. F15b *11/15, 15/17*
U.S. Cl. 91—356 31 Claims



There is provided a fastener driving tool having a control valve actuated only by the combined operation of a trigger device and a safety device. The control valve is used to open and close a known type of cylinder valve. A cycling valve is in-

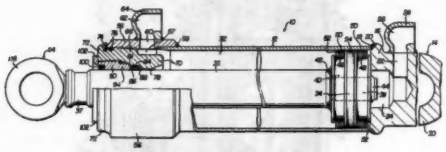
corporated into the control valve so that the tool will operate through both a drive and return stroke automatically regardless of whether the trigger device and safety device have been released.

3,685,397
SWIVEL FITTING
Harley L. Gooding, Jr., Palatine, Ill., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Dec. 21, 1970, Ser. No. 99,735
Int. Cl. F01b *31/00*
U.S. Cl. 92—106 **19 Claims**



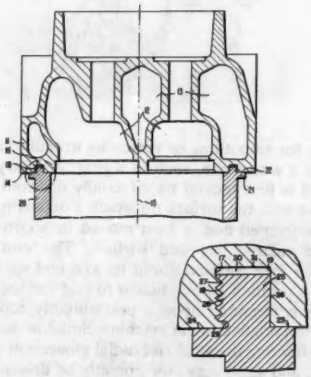
A pressure balanced swivel fitting characterized in that it employs simple squeeze type packing rings and plain ring bearings to retain the swivel fitting members together in axially interfitting relation and to support said members for relative rotation, the bearing rings being disposed in the fluid flow path so that the bearing surfaces are lubricated by flow of fluid through the swivel fitting, i.e., lubricant-laden air in the case of a pneumatic power system or hydraulic oil in the case of a hydraulic power system. The swivel fitting herein is further characterized in that it has interior drain chambers to prevent buildup of high pressure in the fitting in the event of leakage of the packing rings and moreover a low pressure packing ring is employed to prevent external leakage from the swivel fitting from one of said drain chambers.

3,685,398
HYDRAULIC CYLINDER
William E. Little, West Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.
Division of Ser. No. 27,792, April 13, 1970, Pat. No. 3,611,881. This application May 28, 1971, Ser. No. 148,071
Int. Cl. F16j *15/16*
U.S. Cl. 92—165 **4 Claims**



A fluid cylinder and piston assembly which comprises an elongated housing defining a fluid chamber to one end of which is secured an attaching member having an eye for securement to a force absorbing member and a piston and piston rod contained in the fluid chamber for reciprocation therein. The piston is welded to one end of the piston rod and the other end of the piston rod extends outwardly of the elongated fluid chamber and is provided with a screw-in attachment eye for securement to force transmitting member. At the rod end of the elongated housing a removable cartridge is provided carrying a rod seal for sealing the cylinder chamber and a retainer member or gland is screwed into the cartridge from the outside of the cylinder for protection and retainment of the rod seal carried by the removable cartridge and which is provided with a wiper seal to continuously wipe the surface of the piston rod. The screwed-in eye connection at the end of the piston rod is provided with a tapered surface engaging a tapered surface within the piston rod end to lock the eye attachment member to the piston rod in such fashion as to remove load stresses from the threaded connection.

3,685,399
PISTON INTERNAL COMBUSTION ENGINE WITH CYLINDER LINER SECURED DIRECTLY AT THE CYLINDER HEAD
Manfred Hoch, Berlin, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed April 20, 1970, Ser. No. 30,083
Claims priority, application Germany, April 23, 1969, P 19 20 704.6
Int. Cl. F16j *11/04*
U.S. Cl. 92—171 **16 Claims**



A piston internal combustion engine with a cylinder liner secured directly at the cylinder head by means of a mounting collar engaging in an annular groove of the cylinder head; the collar is adjoined externally and internally by annular sealing surfaces provided at the liner end face; the inner flank of the collar serves the purpose of centering the liner while the outer flank thereof serves the purpose of fastening the liner in the cylinder head.

3,685,400
TOOL FOR MAKING FLEXIBLE CRIMPED TUBES FROM PLIABLE SHEET MATERIAL
James Z. Higa, 272 Sylvan Rd., Glencoe, Ill.
Filed Dec. 2, 1969, Ser. No. 881,481
Int. Cl. B31c *13/00*; B31d *5/04*; A41g *1/04*
U.S. Cl. 93—1.5 **3 Claims**

The method, tool and ornamental article made thereby of pliable sheet material formed and crumpled into a flexible

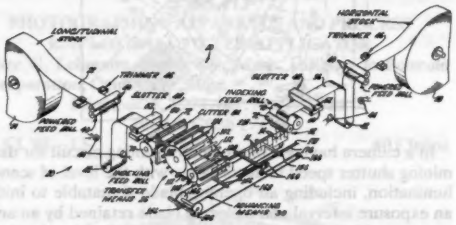
crimped tube. The tool is a sleeve with a flanged end, and a rod slideably received therein. A sheet is wrapped about the sleeve as a gauge to form a hollow open-ended tube which is removed and then crumpled on the rod by the sleeve's flanged end forcefully sliding therealong to crease a relatively regular crimp pattern of substantially diamond shapes.

3,685,401

MACHINE FOR CREATING DIVIDER STRUCTURES SUCH AS ARE USED AS INTERNAL PARTITIONS WITHIN A BOX

Charles L. Peters, Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed Sept. 1, 1970, Ser. No. 68,616
Int. Cl. B31b *1/00*
U.S. Cl. 93—37 R **26 Claims**



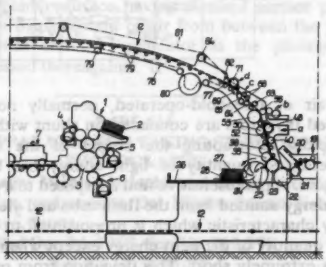
A machine for creating divider structures such as are used as internal partitions within a box employing slotted interlocked partition strips can be constructed utilizing transfer means for individually receiving first strips to extend in one direction in the divider structure, for holding these strips and for conveying them to a location where they are held separate and parallel and where periodically a group of the strips can be removed from the transfer means. In such a machine advancing means are used for periodically receiving such a group of first strips and for advancing the group away from the transfer means while holding them parallel to and spaced from one another in positions in which the slots in the first strips in such a group are in aligned rows. The machine employs inserting means which inserts second strips traverse to the first strips in each of the rows in such a group as such a group is advanced by the advancing means. In the disclosed structure the strips employed are created from continuous lengths of material during machine operation.

3,685,402

ENVELOPE-MAKING MACHINE

Gunter Ehlscheid, Burgstrasse 43, 5453 Niederbieber, Germany

Filed July 27, 1970, Ser. No. 58,296
Claims priority, application Germany, Aug. 1, 1969, P 19 39 183.4
Int. Cl. B31b *1/00*
U.S. Cl. 93—61 R **2 Claims**



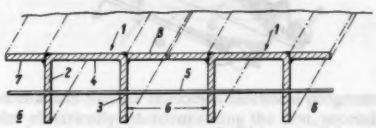
An envelope-making machine is shown having interconnected separate stations for producing the edge perforations of individual envelopes, applying adhesive to the lateral edge portions of the envelopes to be connected with each other, staggering the envelopes, aligning the staggered envelopes in accordance with the edge perforations, drying the edge gluing of the endless strip of staggered envelopes, and winding the strip of endless envelopes on a roll.

3,685,403

ASSEMBLIES OF INTER-LINKED PRE-FABRICATED MEMBERS FOR FORMING A PATH

Arno Domnick, 7 Biener Strasse, 4451 Holthausen, Germany

Filed Feb. 26, 1970, Ser. No. 14,328
Claims priority, application Germany, Feb. 28, 1969, P 19 10 213.7; Aug. 13, 1969, P 19 44 132.6
Int. Cl. E01c *5/00*
U.S. Cl. 94—13 **18 Claims**



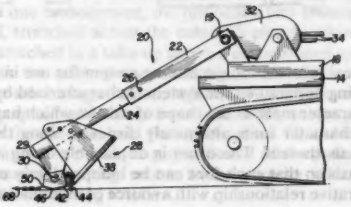
An assembly for covering a strip of ground to provide a temporary or emergency path is disclosed. The assembly comprises a number of pre-fabricated members which are, preferably, flexibly interlinked by means of wire ropes on which the members are threaded. The flexibility of the wire ropes enables the assembly to be rolled up and unrolled and, when the assembly is unrolled over a strip of ground, the prefabricated members are maintained in mutually adjacent relationship by the wire ropes and are so shaped as to substantially cover the whole strip. The members have portions adapted to penetrate the ground so as to provide stability and other portions which provide a substantially uniform surface of a path. The soil or mud on which the assembly is laid is prevented from penetrating through the assembly and coiling the surface of the path.

3,685,404

MULTI-WAY SNOW GROOMING APPARATUS FOR SKI SLOPES

Blaine B. Rich, and Rex M. Brown, both of Smithfield, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 24, 1970, Ser. No. 58,024
Int. Cl. E01c *19/22*
U.S. Cl. 94—44 **5 Claims**



An attachment for flat bed vehicles which combines a snow scarifier, scraper, compactor and mesh drag all in one unit to efficiently and economically groom ski slopes.

3,685,405

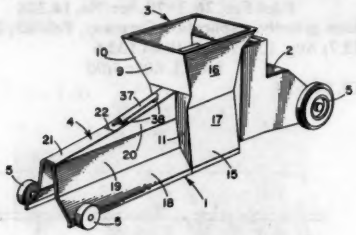
EXTRUSION MOULDING

Dean Barry McDonald, 1 Deepdene Ave., Belleview Heights, Australia (5050), and Albert James McBride, 19 Delamere Ave., Springfield, Australia (5062)

Continuation of Ser. No. 841,554, July 14, 1969, abandoned. This application April 14, 1970, Ser. No. 28,401

Int. Cl. E01c *19/48*

U.S. Cl. 94—46 R **12 Claims**



A moulding machine for the continuous extrusion moulding of concrete comprising a hopper for the concrete to be moulded, a mould opening into the hopper, immersion vibrators in the hopper and concentrated mainly in the region of the hopper above the top of the mould, a further vibrator attached to the mould to prevent adhesion of the moulding to the mould, said hopper and mould being movable to extrude the concrete through the mould.

3,685,406

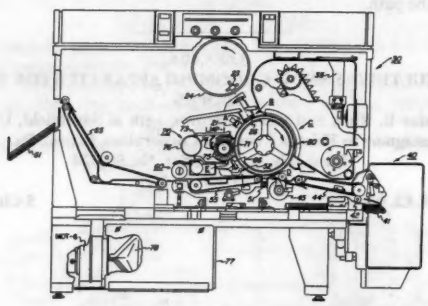
OPTICAL RECORDER

Philip L. Chen, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 21, 1970, Ser. No. 99,940

Int. Cl. B41b *17/10, 17/00*

U.S. Cl. 95—4.5 R **11 Claims**



Optical information generating system for use in display or recording apparatus. The system is characterized by a rotatable character mask in the shape of a drum which has a plurality of character fonts alternately disposed along the longitudinal axis thereof. The drum is displacable along its longitudinal axis so that each font can be independently moved into cooperative relationship with a source of illumination.

3,685,407

Patent Not Issued For This Number

3,685,408

SHUTTER CONTROL APPARATUS FOR PHOTOGRAPHIC CAMERAS

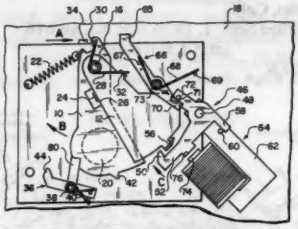
Helmut Ettischer, Postfach 369, 7 Stuttgart-60 Wangen, Germany, assignor Eastman Kodak Company

Filed Feb. 25, 1971, Ser. No. 118,746

Claims priority, application Germany, March 7, 1970, P 20 10 853.6

Int. Cl. G03b *7/08, 9/58*

U.S. Cl. 95—10 C **6 Claims**



In a camera having a photoelectric-timing circuit for determining shutter speed in accordance with the level of scene illumination, including an opening blade actuatable to initiate an exposure interval and a closing blade retained by an armature movable by an electromagnet controlled by the timing circuit to release the closing blade. A spring biased lock is provided for locking the armature and the closing blade during opening of the opening blade. The spring bias is released prior to attraction of the armature by the electromagnet to close the closing blade.

3,685,409

APPARATUS FOR REGULATING THE LIGHT ENERGY DECAY CHARACTERISTIC OF A PULSED FLASH DEVICE

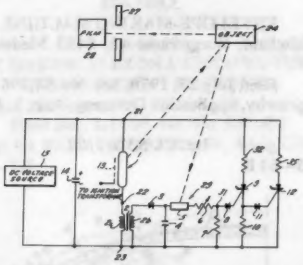
Rolf Dieter Dennewitz, Berlin, Germany, assignor to Loewe Opta GmbH, Berlin, Germany

Filed May 11, 1970, Ser. No. 35,992

Claims priority, application Germany, March 6, 1970, P 20 11 534.8

Int. Cl. G03b *15/02, 15/05*; H05b *41/00*

U.S. Cl. 95—11 R **2 Claims**



A pair of threshold-operated, normally non-conductive cascaded thyristors are connected in shunt with a flash tube for rapidly interrupting the output of the tube when a predetermined quantity of light energy has been emitted therefrom. A photosensitive film is exposed to a portion of the light energy emitted from the flash tube and yields an optical density characteristic which is proportional to the predetermined quantity of the light energy except when the exposure time is extremely short. This deviation from proportionality for short exposure times is compensated by coupling a suitably valued resistor in the transconductive path of each of the thyristors to delay the extinction of the flash after interrup-

tion. The resistance value is chosen to provide sufficient residual flash exposure of the film to raise its optical density to a value more nearly proportional to the predetermined quantity of light.

3,685,410

Patent Not Issued For This Number

3,685,411

Patent Not Issued For This Number

3,685,412

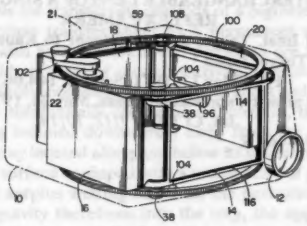
PHOTOGRAPHING APPARATUS AND PROCESS EMPLOYING A FILTER-APPLICATOR

Walter G. Lehmann, Somerville, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1971, Ser. No. 103,986

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **40 Claims**



Photographic apparatus and process employing an applicator body disposed in communication with a container of processing liquid and adapted for conduction of the liquid to a surface of the body which is pressed into contact with the photosensitive area of an exposed sheet of photographic material. The applicator body is of filter material which upon contact with the liquid is pervious to the liquid and impervious to gas within a given range of pressure differential such that upon application of a suitable pressure to the source, gas-free liquid is conducted to the applicator surface and uniformly distributed thereat. Preferably, the container of the source of liquid and the applicator body are provided in a disposable assembly adapted for releasable mounting on a camera, and the container includes a plurality of deformable areas which may be selectively activated for repetitive application of a differential pressure to the applicator body in accordance with processing of successive film sheets. Additionally, a movable member mounted within the camera, for pressing of each film sheet into contact with the applicator body, includes a resilient non-planar surface having a raised surface portion configured for displacement of air from between the photographic material and the applicator as the photographic material is pressed thereagainst.

3,685,413

CAMERA APPARATUS FOR TAKING STEREOGRAPHIC PHOTOGRAPHS

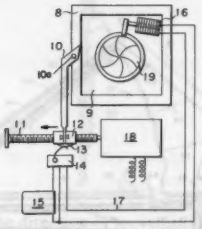
Kenji Matsunaga; Michio Horiuchi, and Takao Suzuki, all of Tokyo, Japan, assignors to Dai Nippon Insatu Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1969, Ser. No. 869,270

Int. Cl. G03b *35/08*

U.S. Cl. 95—18 P **11 Claims**

A camera mechanism for taking stereographic photographs, embodying a first mechanism for moving a lenticular screen, a second mechanism operatively interconnected with the first mechanism, and operable to control the shutter at prescribed time intervals to make exposures correlated to the movement of the light-restricting screen, and a third mechanism controlling the travel of the camera at predetermined increments of travel relative to the subject being photographed. The



camera mechanism further embodies electrical programming circuitry for electrically interconnecting the first, second and third mechanisms to correlate a predetermined amount of camera travel with a predetermined movement of the lenticular screen and the corresponding timely actuation of the shutter.

3,685,414

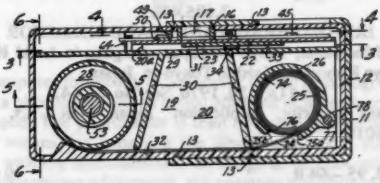
SPRING-POWERED PRELOADED CAMERA

Paul J. Good, Springwater, N.Y., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed April 30, 1968, Ser. No. 725,297

Int. Cl. G03b *1/12, 1/62, 17/02*

U.S. Cl. 95—31 AC **13 Claims**



A camera preloaded with film and having a pretensioned spring drive means by which film is advanced through the camera. In one embodiment, the preloaded film is stored in a supply roll, stretched across the camera's picture-taking light path, and attached to a take-up spool; a pretensioned spring is coaxial with the take-up spool and biases the take-up spool toward film-advancing rotation; at least one stop is formed on the take-up spool; and a stop lever is normally in the path of the stop on the spool to hold the spool against film-advancing rotation, but the stop lever is pivotable out of the path of the stop by camera-actuating means to temporarily release the spool for film-advancing rotation.

3,685,415

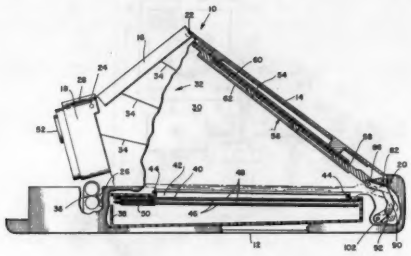
Patent Not Issued For This Number

3,685,416

PHOTOGRAPHIC APPARATUS WITH DYNAMICALLY CONTROLLED REFLEX ACTION

Edward H. Coughlan, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1970, Ser. No. 103,219
Int. Cl. G03b 19/12
U.S. Cl. 95—42 **11 Claims**



Reflex photographic apparatus incorporating an reflecting member which is moved during a photographic cycle to convert an optical path from viewing-focusing to exposure configurations. A low-rate torsion drive spring moves the reflecting member from a viewing position to an exposure position quickly, while minimizing elastic rebound at the termination of movement. A motor is used to return the reflecting member to its viewing position following a photographic exposure. Mounted coaxially with, and disposed within the drive spring, is a second low-rate torsion spring which is operative to provide a lost-motion connection between the reflecting member and the return motor. Should the reflecting member be restrained during its return movement, the lost-motion connection permits the motor to complete its cycle without overloading.

3,685,417

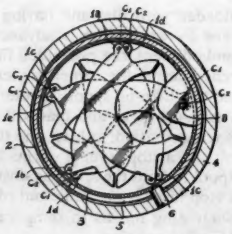
Patent Not Issued For This Number

3,685,418

IRIS DIAPHRAGM AND BLADE THEREFOR

Itsuki Moriyama, Tokyo-to, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 30, 1970, Ser. No. 85,642
Claims priority, application Japan, Dec. 13, 1969, 44/118010
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R **9 Claims**



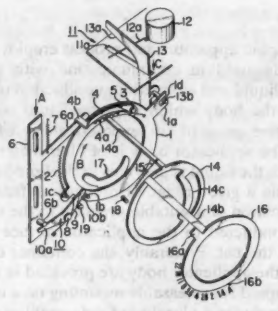
An iris diaphragm for determining the size of an aperture in photographic equipment. The diaphragm includes a plurality of blades of flat sheet material of arcuate configuration. Each blade extends along an arc of a circle and has an inner concave edge and an outer convex edge. Also each blade has a pair of radial projections projecting radially beyond the outer convex edge. Each blade carries a pair of pins respectively projecting from opposed faces of each blade at the radial projections thereof, with one of these pins forming a pivot pin for each blade and the other of the pins forming a swing pin circumferentially displaced about the pivot pin during swinging of each blade to adjust the size of the aperture. The several blades are consecutively arranged in circumferentially overlapping relationship and respectively supported for swinging movement about their pivot pins while an adjusting means coacts with the swing pins to swing the blades between a position of maximum aperture where they provide a maximum aperture of circular configuration and a position of minimum aperture completely closing the aperture so that no light can pass through the diaphragm in its position of minimum aperture. Each blade has at least one circumferentially extending end projection projecting circumferentially beyond one of the radial projections and coacting with the other blades for maintaining the several blades respectively only in their own planes without permitting the blades to abut at their inner or outer edges.

3,685,419

MECHANISM FOR COUPLING THE EXPOSURE METER TO THE APERTURE DIAPHRAGM CONTROL MEANS IN AN INTERCHANGEABLE LENS OF A SINGLE-LENS REFLEX CAMERA

Tadayuki Imai, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed May 17, 1971, Ser. No. 144,063
Claims priority, application Japan, May 26, 1970, 45/44988
Int. Cl. G03b 7/12, 17/14
U.S. Cl. 95—64 R **3 Claims**



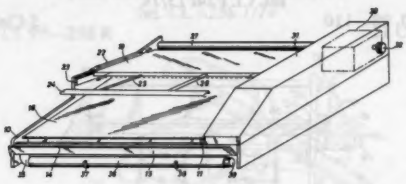
A ring for coupling an exposure meter to an aperture stop control means is disposed on the body of a single-lens reflex camera employing the screw-in type interchangeable lenses and is rotatable about the optical axis of the lens, and a clutch lever is rotatably fixed to this coupling ring. The free end of the clutch lever engages with a projection of a shutter release lever in such a way that the clutch lever is normally moved away from a horizontal coupling arm of an aperture stop control ring which is disposed in the lens and is provided with an aperture stop control cam, so long as the shutter release lever is not depressed or moved downwardly. Therefore, when the lens is mounted, the horizontal coupling arm will not engage with the clutch lever, so that the lens may be mounted and dismounted freely. Upon depression of the shutter release lever, the clutch lever moves into mechanical or frictional engagement with the coupling arm, and when the shutter release lever is further depressed the coupling ring is rotated through an angle corresponding to the angle of displacement of the pointer of the exposure meter so that the clutch lever rotates the control ring in unison with the coupling ring.

3,685,420

TRANSFER APPARATUS

Emile Frans Stievenart, Nachtegaallaan 67a, Hoboken; Omer Jan Mees, Steenweg near Dendermonde 79B, Willebroek, and Johan Lodewijk Verelst, Wipstraat 18, Kontich, all of Belgium

Filed Oct. 15, 1969, Ser. No. 866,586
Claims priority, application Great Britain, Oct. 15, 1968, 48,788/68
Int. Cl. G03d 15/00
U.S. Cl. 95—89 L 3 Claims



An apparatus for transferring portions of a pigmented layer from a temporary transfer sheet to a permanent receiving sheet wetted with liquid wherein two platforms are arranged on the same side of a set of rotatably driven pressure rollers, the lower platform receiving the permanent sheet and being of a size at least substantially coextensive therewith, the lower platform being inclined downwardly away from the pressure rollers with a tray located along and below its lower-most edge and having its surface equipped with a multiplicity of protuberances so that surplus wetting liquid on the permanent sheet may flow by gravity therefrom into the tray, the upper platform being inclined upwardly from the pressure rollers for receiving the temporary sheet, the two platforms having their adjacent edges proximate the nip of the pressure rollers and to one another so that the adjacent ends of the sheet can be introduced into the nip of such rollers after the sheets are oriented on their respective platforms.

3,685,421

Patent Not Issued For This Number

3,685,422

Patent Not Issued For This Number

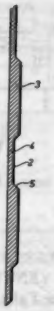
3,685,423

CURTAIN FOR CAMERA SHUTTERS

Lennart G. O. Dahlgren, Vastra Frolunda, Sweden, assignor to Fritz Victor Hasselblad Techn., Goteborg, Sweden

Filed June 8, 1970, Ser. No. 44,520
Claims priority, application Sweden, June 6, 1969, 8103/69
Int. Cl. G03b 9/28
U.S. Cl. 95—57 7 Claims

A curtain for camera shutters consisting of a thin plastic foil having arranged on at least one side thereof grooves which extend at right angles to the direction of movement of the curtain so as to provide for a high degree of bending resistance



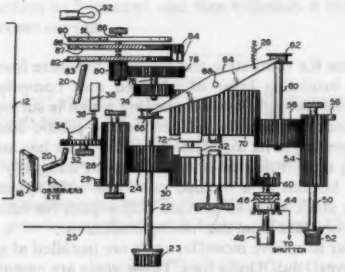
perpendicular to the direction of movement of the curtain and a relatively low bending resistance in the plane of movement thereof.

3,685,424

CAMERA COMPUTER APPARATUS

Ivar Saul, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 4, 1970, Ser. No. 60,788
Int. Cl. G03b 9/02
U.S. Cl. 95—64 B 3 Claims



A computer for setting a camera for taking a photograph includes a photometer which is first adjusted in accordance with film speed. The photometer is then operable by aperture adjusting means for matching the illumination of a standard source with the illumination of an image to be photographed. After photometer adjustment, the aperture adjusting means is interrelated with a shutter speed control whereby either quantity may then be altered while maintaining a predetermined exposure value. When the aperture adjusting means is employed for operating the photometer, film speed adjustment is interengaged with the shutter speed control for maintaining an accurate relation between the various quantities.

3,685,425

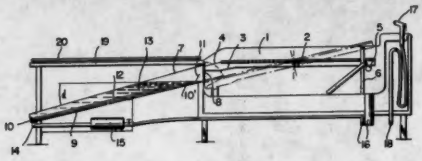
APPARATUS FOR THE AFTER-TREATMENT OF EXPOSED SHEET MATERIAL

Herbert Fick, Stuttgart-Bad Cannstatt, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Nov. 9, 1970, Ser. No. 87,734
Claims priority, application Germany, Nov. 12, 1969, P 19 56 840.2
Int. Cl. G03d 3/10
U.S. Cl. 95—89 R 12 Claims

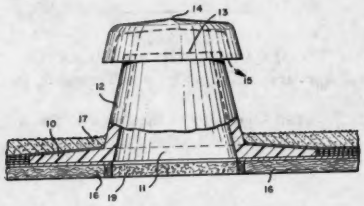
An apparatus for the after-treatment of exposed sheet material comprising a trough, a tiltable perforated feed table

mounted above said trough, a working table adjoining said feed table, and a developing container positioned laterally



below the feed table and being inclined with respect to the horizontal.

3,685,426
ROOF VENTILATOR
Daniel F. Rosa, Menomonee Falls, Wis., assignor to Medi-Plas Sciences, Inc.
Filed Oct. 9, 1970, Ser. No. 79,535
Int. Cl. F23l *17/02*
U.S. Cl. 98—83 **3 Claims**



A device for ventilating and relieving moisture from the underlying insulating layer of a sealed roof comprises a flat plastic base having a central opening which is surrounded by an upstanding integrally molded hollow plastic stack which has an opening at its top. The top of the stack has notches for receiving tight-fitting webs which project integrally from the concave bottom of a molded cap. The webs space the cap from the stack so as to provide a flow path for relieving entrapped moisture from the roofing insulation.

In order to relieve moseDe, vents are installed at spaeed intervals overD)hdDDoEv irea. These vents are essentially hollow stackes which are set over

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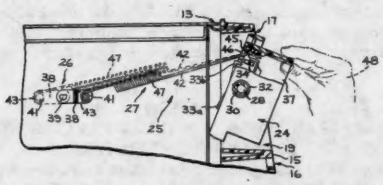
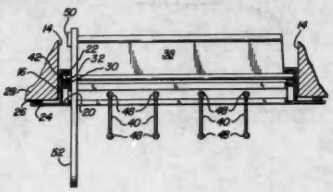
3,685,427
AIR-CONDITIONER AIR-DIRECTING MECHANISM
Raymond E. Loyd, Jeffersontown, Ky., assignor to General Electric Company
Filed March 2, 1971, Ser. No. 120,208
Int. Cl. F24f *13/08*
U.S. Cl. 98—94 **2 Claims**



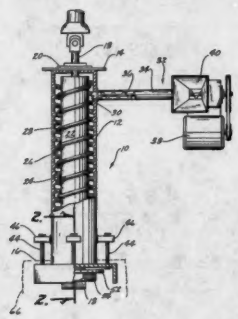
This invention provides an improved mechanism for directing the flow of conditioned-air from a room air conditioner. The improved mechanism of the present invention comprises means defining a conditioned-air discharge opening from the air-conditioner, motorized drive means mounted on the air-conditioner, air-directing means mountable in the opening for movement relative thereto by drive means, and yieldable linkage means for drivingly connecting the air-directing means to the drive means such that none of the means will be damaged as a result of obstruction of the driven movement of the air-directing means.

3,685,428
GRILLE
Edward T. Kelly, and Keith D. McClain, both of Cedar Falls, Iowa, assignors to Dynamics Corporation of America, New York, N.Y.
Filed April 29, 1970, Ser. No. 32,890
Int. Cl. F24f *13/14*
U.S. Cl. 98—110 **5 Claims**



A heavy duty industrial grille with a frame having adjacent inwardly facing grooves each with parallel end and side sections. A resilient strip of bearing material is provided in end sections of one groove and in side sections of the other and each strip has a series of bearing openings therein which receive bearing studs at end portions of air directing vanes. The vanes are arranged in first and second series at right angles with respect to each other and at least one series of vanes has an associated connecting link and actuator for gang adjustment.

3,685,429
SOY BEAN PROCESSING MACHINE
John A. McBride, Grimes, Iowa
Filed May 19, 1969, Ser. No. 825,493
Int. Cl. A23k *3/00*
U.S. Cl. 99—235 R **9 Claims**



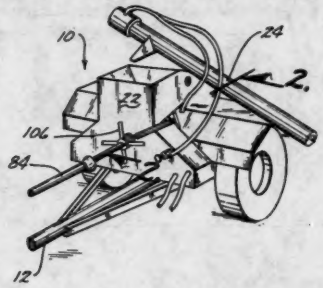
A processing machine for soy beans or other like material comprising an auger assembly which force feeds soy beans into a main housing having a driven shaft rotatably extending thereinto. A screw conveyer means is rotatably mounted in the housing and is connected to the driven shaft for rotation therewith. The screw conveyer means is adapted to convey the soy beans along the entire length of the main housing from its intake end to its discharge end. The soy beans are crushed and conveyed by the conveyer means and are forced through a constricted area around the shaft of the conveyer means at the discharge end of the housing. An end plate on the housing has

one end of the driven shaft rotatably extending though an opening formed therein through which the material is forced. The soy bean material is then forced between the outer surface of the end plate and a flat washer or plate on the outer end of the shaft. The soy beans are crushed, heated and cooked by heat and pressure applied thereto as the same travels through the housing and passes outwardly therefrom.

3,685,430
SOY BEAN PROCESSING MACHINE

John A. McBride, 4760 N.W. 50th St., Des Moines, Iowa

Filed Oct. 28, 1970, Ser. No. 84,730
Int. Cl. A23k 1/14
U.S. Cl. 99—235 R **11 Claims**



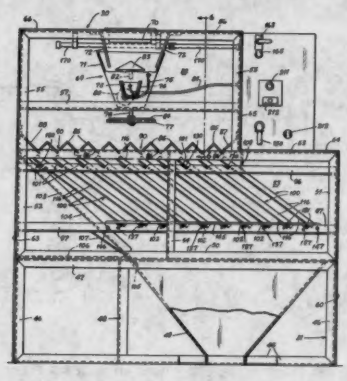
A processing machine for soy beans or other like material comprising a variable speed auger means which feeds soy beans into a hopper positioned above and in communication with an elongated barrel type housing. A screw conveyor means is rotatably mounted in the housing and has one end thereof operatively connected to power means for rotation thereof. A spiral flighting means extends from the conveyor means towards the housing for conveying the soy beans along the length of the housing from its intake end to its discharge end. A fluting means is provided on the interior surface of the housing and extends towards the screw conveyor means. A frustum-shaped end plate is secured to the discharge end of the screw conveyor means for rotation therewith. A ring-shaped end member is secured to the discharge end of the housing and has a central opening formed therein with a progressively increasing diameter. The frustum-shaped end member is rotatably received within the central opening. A bearing means is provided at the intake end of the conveyor means and is threadably mounted in the intake end of the housing to permit the selective longitudinal movement of the conveyor means with respect to the housing. The selective longitudinal movement of the bearing means causes the longitudinal movement of the conveyor means which permits the clearance between the frustum-shaped end member and the ring-shaped end member to be varied. A brake means is provided on the machine adapted to engage the bearing means to maintain it in its selected positions with respect to the housing. A temperature sensing means is also provided on the housing for sensing the temperature of the material at the discharge end thereof. The soy beans are crushed and conveyed by the conveyor means and are forced outwardly from the housing between the frustum-shaped end member and the ring-shaped member. The soy beans are crushed, heated and cooked by heat and pressure applied thereto as the same travels through the housing and passes outwardly therefrom.

3,685,431
MACHINE FOR KILLING INSECTS

Obed W. Stone, 425 S. Gore Ave., Webster Groves, Mo.

Filed Oct. 29, 1969, Ser. No. 872,233
Int. Cl. A23b 9/00; A23l 3/32
U.S. Cl. 99—253 **8 Claims**

Machine for killing insects in a stream of grain or finely divided food, the grain flowing down into the machine onto a distributor for even spreading over a plurality of angle deflectors, and by them directed downwardly and forwardly onto a plurality of angularly disposed grids. In flowing over the electrified grids, insects are electrocuted. From the grids the material flows into a hopper and back into the stream. Anti-explosive atmosphere is maintained in the machine by a

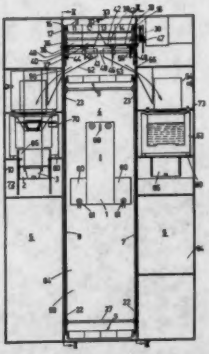


sequencing control, to feed in non-combustible gas in regulated quantities to maintain the oxygen content within 5–10 percent, preventing starting and electrification of the machine until a test arrangement finds the oxygen content reduced below 10 percent, and thereafter feeding CO_2 at rates to continue reduction to 5 percent, and then maintain it between 5 and 10 percent oxygen.

3,685,432
AUTOMATIC VENDING MACHINE FOR COOKED OR FRIED FOOD PRODUCT PARTICULARLY FOR FRENCH-FRIED POTATOES

Jean Marie Mathieu Hoeberigs, 56 Eeuwfeestlaan, B 8390 Heist-Duinbergen, Belgium

Filed March 12, 1971, Ser. No. 123,727
Claims priority, application Belgium, March 13, 1970, 86412
Int. Cl. A47j 37/12
U.S. Cl. 99—357 **29 Claims**



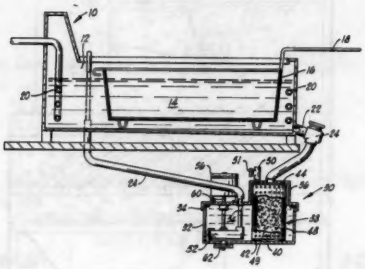
An automatic vending machine for freshly cooked food products with a conveyor provided with partitioned holders for the food products and a frying kettle. A supply funnel divided into compartments which are each closed by a separately-operatable flap, is provided between the conveyor and the kettle. A tipping device reverses the conveyor holders above said funnel.

3,685,433

DEEP FAT FRYER ASSEMBLY

Cecil R. Cunningham, 1912 Mockingbird Lane, Altus, Okla.

Filed April 14, 1971, Ser. No. 133,784
Int. Cl. A47j 37/12
U.S. Cl. 99—408 8 Claims



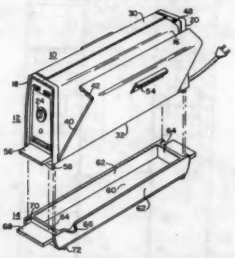
A deep fat fryer assembly which includes a fryer well for containing heated cooking oil to be used in frying, and a filtering and recirculation subassembly connected to the well. The filtering and recirculation subassembly includes a housing having in one side thereof a vertically extending, foraminous, cylindrical filter element through which cooking oil from the well is drawn to remove the solid residual and burned materials from the fat. In another portion of the housing, a gear pump is located and is attached to the shaft of the motor located outside the housing, with the outlet of the pump communicating with the well for recirculating clean, filtered cooking oil from the housing to the well. The housing may be quickly disassembled to permit access to be had to the filter for cleaning the filter and replacing it, and also for maintaining and servicing the gear pump.

3,685,434

BACON COOKER

John William Harrison, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 1, 1970, Ser. No. 51,566
Int. Cl. A47j 37/00
U.S. Cl. 99—425 3 Claims



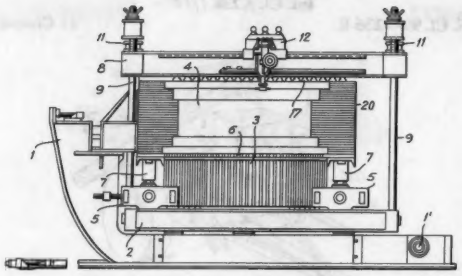
A cooking appliance having a cooking surface and housing supported on a separate base which also function as a tray to catch and retain the grease which drops from the above cooking surface. The separate units provide easy disposal of the collected grease whereas the legs on the housing of the cooking surface and the walls of the tray cooperate to provide proper registry when stacked together.

3,685,435

STAND FOR ASSEMBLING AND PRESSING MAGNETIC CIRCUITS OF POWER TRANSFORMERS

Gennady Ivanovich Pshenichny, ulitsa Kremlevskaya, 27, kv. 8; Yakov Zinovievich Checheljuk, Dnepropetrovskoe shosse, 48, kv. 17, and Mikhail Andreevich Afanasiev, Dnepropetrovskoe shosse, 62, kv. 65, all of Zaporozhie, U.S.S.R.

Filed Sept. 2, 1969, Ser. No. 854,610
Int. Cl. B65b 13/20
U.S. Cl. 100—8 5 Claims



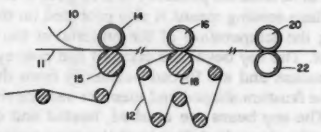
A stand designed for assembling and pressing magnetic circuits of power transformers and comprising a turnable base mounting an assembly table which has supports for cores and yokes of the magnetic circuit, and a portable pressing beam with a drive adapted for displacing the latter beam when pressing, the supports for yokes being fashioned as transverse beams carrying jacks which serve to adjust the height of the supports.

3,685,436

PROCESS FOR SQUEEZING WATER FROM PAPER SHEET

Paul J. Mitchell, Jr., Griffin, Ga., assignor to SW Industries, Inc., Newton, Mass.

Division of Ser. No. 831,161, June 6, 1969, Pat. No. 3,639,957, which is a continuation-in-part of Ser. No. 606,412, Dec. 30, 1966, Pat. No. 3,460,222. This application June 1, 1971, Ser. No. 148,970
Int. Cl. B30b 9/02
U.S. Cl. 100—37 2 Claims



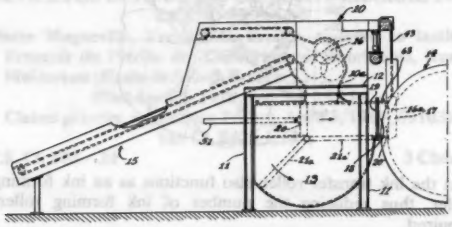
In a paper making machine, following casting of the aqueous pulp suspension onto a moving web and partial drainage of water therefrom to form a wet sheet, water is pressed from the wet sheet by rolls that are characterized by a covering composed of a butadiene acrylonitrile elastomer and a dispersion of hydrophobic fiber strands penetrating through the outer surface of the elastomer. Such rolls have superior release characteristics with respect to the wet sheet.

3,685,437

COMBINED SHREDDING, COMPACTING AND INCINERATING APPARATUS

Martin H. Panning, Thiensville, Wis., assignor to Blower Application Company

Filed Oct. 12, 1970, Ser. No. 80,058
Int. Cl. B30b *15/30*
U.S. Cl. 100—45 16 Claims



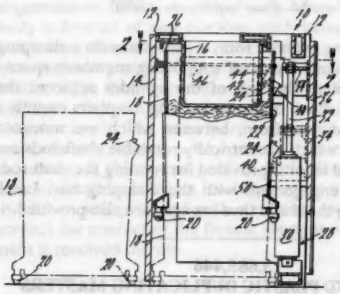
An assembly of a shredder, compactor and incinerator for receiving loose material, i.e. paper and the like, shredding it into small pieces, then compacting accumulated pieces into a bale-like form for delivery to an incinerator. A compacting wall moves against shredded material in an enlarged space and forces it toward an outer wall which defines, with the compacting wall and side walls, a bale-like form whereupon a ram moves the compacted material through an opening in an incinerator. The incinerator includes an inlet fire door which upon closure thereof wipes the material clean from the face of the ram. The system includes automatic means for closing an inlet to the compacting device, compacting the material, ejecting the material into the incinerator, and operating the door for the inlet into the incinerator.

3,685,438

REFUSE COMPACTOR

William E. Ziegler, 7050 W. Ellsworth Ave., Ann Arbor, Mich.

Filed Oct. 9, 1970, Ser. No. 79,538
Int. Cl. B30b *15/16*
U.S. Cl. 100—48 5 Claims



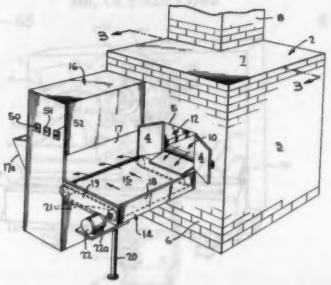
Apparatus for compacting refuse comprising a fixed position compactor head, a portable refuse container having an open upper end and positionable below and in substantially vertical alignment with the head, and lift apparatus engageable with the container and operable to move the container upwardly to engage the refuse therein with the head so as to compact the refuse in the container. The lift apparatus consists of a cylinder assembly operated by water pressure and capable of maintaining a sustained force on the container over a period of time so that the refuse therein is subjected to a continuous compacting action by the head. A door operated valve controls the flow of water to the cylinder assembly.

3,685,439

INCINERATOR CONVERSION MEANS

John A. Boyd, 3314 Holloman Rd., Falls Church, Va.

Filed May 11, 1971, Ser. No. 142,167
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 9 Claims



A conversion means adapts existing incinerators to the disposal of wastes by compacting such wastes and thereby reduces polluting of the air by burning said wastes. The interior of the existing incinerator is modified so that any wastes collected therein can be moved from the interior of the incinerator through an already existing fire door or a specially made opening. The wastes exiting through the opening are then directed into a compacting machine which compresses the wastes into bales.

3,685,440

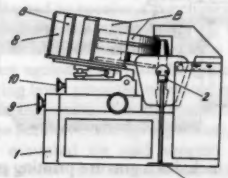
Patent Not Issued For This Number

3,685,441

AUTOMATIC CUP PRINTING MACHINE

Rene Aebersold, and Werner Lehmann, both of Fribourg, Switzerland, assignors to Polytype AG, Freibuag, Switzerland

Filed April 27, 1970, Ser. No. 31,992
Claims priority, application Sweden, May 8, 1969, 6545/69
Int. Cl. B41f *17/28*
U.S. Cl. 101—38 A 3 Claims



In an automatic cup printing machine, a transfer device is arranged for locating cup holders in position for printing and varnishing cups and includes a turntable on which the cup holders are mounted. A printing machine for the cups is adjustably positionable relative to the cup holders. Angularly spaced from the printing machine relative to the turntable is an apparatus for applying varnish to the cups positioned on the cup holders. The over-varnishing apparatus is positionable between a horizontal plane and an angular plane pivoted upwardly from the horizontal plane. After leaving the varnishing station, the cups are removed by a take-off device which is movably displaceable between a position for removing the cups and a position for depositing the cups on a conveyor.

3,685,442

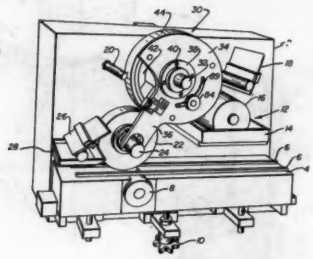
ROTARY OFFSET SILK SCREENING APPARATUS WITH SQUEEGEE ADJUSTMENTS

Roy M. Harwell, Jr., 747 St. Michaels Lane, Gastonia, N.C.

Filed Oct. 20, 1969, Ser. No. 867,737

Int. Cl. B41l *13/04*

U.S. Cl. 101—119 **4 Claims**



An offset silk screening method and apparatus, wherein a continuous screen is the periphery of a rotary head, and wherein ink is forced through image areas of said periphery onto a soft elastomeric roller positioned for tangential contact with said peripherally mounted screen. The image picked up by the soft elastomeric roller is transferred to a work piece delivered to said soft roller, said work piece possibly including irregular surfaces which still take such image. The improved rotary head includes means to reposition the squeegee assembly to change the pressure against the screen, and further including means to change the radial angle of the squeegee assembly relative to the axis of the head.

3,685,443

IMPRESSION CYLINDER FOR GRAVURE PRINTING PRESS

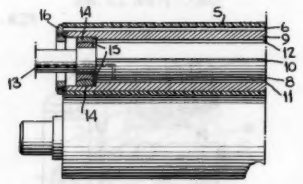
Eduard Kusters, Finkenwey 18, Krefeld-Forstwald 1, Germany

Filed Feb. 24, 1966, Ser. No. 529,871

Claims priority, application Germany, Feb. 25, 1965, K 55382

Int. Cl. B41f *9/00, 13/18*

U.S. Cl. 101—153 **4 Claims**



The disclosure includes a gravure printing press with an impression cylinder covered with elastically deformable polyurethane having a hardness in the range of 88° – 96° Shore A. Other features are disclosed.

3,685,444

INK FORMING DEVICE FOR OFFSET PRINTING MACHINE

Tamaki Kaneko, and Katsumi Mizuno, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

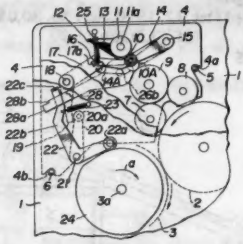
Filed Aug. 26, 1970, Ser. No. 67,058

Claims priority, application Japan, Sept. 6, 1969, 44/70822

Int. Cl. B41f *31/06, 31/14*

U.S. Cl. 101—217 **6 Claims**

An ink forming device for offset printing machines wherein an ink transfer roller interposed between an ink fountain roller and an oscillator roller, which acts as one of the ink forming rollers, is caused to press against the oscillator roller when the ink fountain roller is not supplying ink from an ink fountain, so that the ink transfer roller also functions as an ink forming roller, thus reducing the number of ink forming rollers required.



3,685,445

CLAMPING APPARATUS FOR OFFSET CYLINDERS

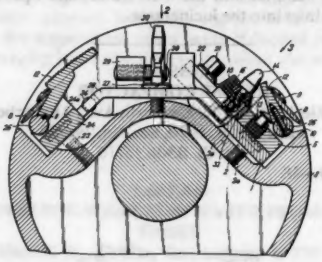
Miloslav Muselik, Ricmanice, Czechoslovakia, assignor to Adamovske Strojirny narodni podnik, Adamov, Czechoslovakia

Filed May 19, 1970, Ser. No. 38,713

Claims priority, application Czechoslovakia, June 6, 1969, 4005/69

Int. Cl. B41f *1/30, 27/12*

U.S. Cl. 101—415.1 **5 Claims**



An offset printing cylinder form is provided with a clamping apparatus comprising a pair of supporting members spaced apart and parallel to the axis of the cylinder adjacent the periphery thereof. Each of the supporting members mounts a clamp bar spaced therefrom, between which are mounted bearing means in which eccentrically rotatable shaft rods are located. A manual lever is provided for rotating the shaft rods into and out of engagement with the clamping bar. Latch means for holding the shafts thus engaged are also provided.

3,685,446

SULFONATED PLASTIC DUPLICATING MASTERS

Wilhelm E. Walles, 3606 Chestnut Hills, Midland, Mich.; Robert J. Caiola, 452 7th St., Saginaw, Mich., and Harold J. Donald, 1306 Wallen, Midland, Mich.

Filed July 3, 1969, Ser. No. 839,062

Int. Cl. B41n *1/00, 3/00;* **B41m** *5/00*

U.S. Cl. 101—453 **10 Claims**

Plastic duplicating masters comprising a film of sulfonated plastic on which is fused an imaged coating of a duplicating composition such as a lithographic or hectographic composition. The imaged coating is obtained by exposing a composite of an original document, a transfer sheet having a fusible duplicating coating, and the sulfonated film to visible radiation, infrared radiation, or a combination of these for a short time.

3,685,447

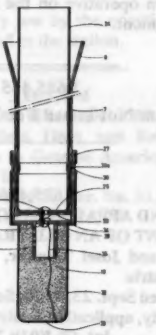
Patent Not Issued For This Number

3,685,448

DEVICE FOR DETONATING EXPLOSIVE CHARGES IN A LIQUID MEDIUM

Pierre Magneville, Vernouillet, France, assignor to Institut Francois du Petrole des Carburants et Lubrifiants, Rueil-Malmaison (Hauts de Seine), France

Filed April 3, 1970, Ser. No. 25,314
Claims priority, application France, April 3, 1969, 6910364
Int. Cl. F42b *3/10*
U.S. Cl. 102—24 3 Claims



In a device for detonating an explosive charge in a liquid medium by closing an electric circuit comprising a first conductive member passing through an explosive charge contained in a nose end portion of a cartridge body, the other end of the body having a flared portion and serving as a means for seating the body in an immersed end of a charging tube, and a second conductive member for electrically connecting the first conductive member to terminals of a current source, an improvement of the cartridge body being that the cartridge body is formed of two portions each being equipped with a conductive circuit member. One of these portions is a female element having an insulating inner wall and a conductive outer wall in which these two walls define a chamber containing the explosive charge and the inner wall having a contact of the electric circuit. The other portion is in the form of a hollow male element having a closed end portion adapted to be received in a closed end portion of the female element. The male element includes an insulating outer wall and a conductive inner wall provided with a contact member adapted to contact the contact of the female element when the male element is received therein.

3,685,449

EXPLOSIVE BOOSTER

Thomas P. Dowling, Whitehall, Pa., assignor to Commercial Solvents Corporation

Filed Aug. 10, 1970, Ser. No. 62,676
Int. Cl. F42b *3/10*
U.S. Cl. 102—24 3 Claims

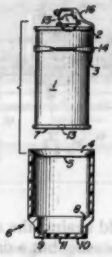
An explosive booster for detonating insensitive blasting charges and a process for the manufacture thereof. The explosive booster has a core of detonating cord, the ends of which have been coated, encased in a sheath of relatively insensitive explosive material of high brisance.

3,685,450

FLOATING GRENADE CUP

Calvin Walbeck, North East; John M. Jacoby, Edgewood; Carl E. Gepp, Bel Air, and Louis A. Robertson, Edgewood, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed June 3, 1970, Ser. No. 43,048
Int. Cl. F42b *13/44*
U.S. Cl. 102—65 5 Claims



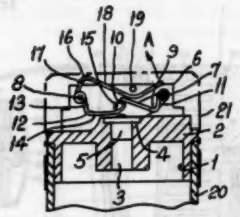
An apparatus and method for dispensing a predetermined material over a body of water by floating a munition on the body of water.

3,685,451

STRIKER MECHANISMS FOR PERCUSSION IGNITERS

Graeme Bowring, Camberley, Surrey, England, assignor to Schermuly Limited, Surrey, England

Filed Feb. 28, 1969, Ser. No. 803,274
Int. Cl. F42c *15/02*; F42b *27/08*; F42c *15/18*
U.S. Cl. 102—70 8 Claims



A striker mechanism for a percussion igniter, which is particularly suitable for use with a pyrotechnic device, comprising a support adapted to receive a percussion igniter, a striker pivotally mounted on the support, spring means associated with the striker to urge the latter to rotate into a position in which it is driven against a percussion igniter mounted in the support, a cocking lever pivotally mounted on the support and engageable with the striker for the purpose of cocking the latter against the action of said spring means, and an actuating lever pivotally mounted on said support for moving said cocking lever in order first to cock the striker and then to release it to enable the spring means to re-assert itself and drive the striker towards said position.

3,685,452

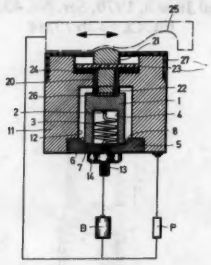
ELECTRICAL SWITCH ACTING WITH THE FORCE OF INERTIA

Manfred Held, Kuhbach, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed March 18, 1971, Ser. No. 125,586
Claims priority, application Germany, April 1, 1970, P 20 15 384.8
Int. Cl. F42b *5/08*; H01h *35/14*
U.S. Cl. 102—70.2 R 3 Claims

An inertia switch for the closing of an electrical circuit. Said switch comprises an electrically conductive cup-shaped iner-

tia body supported on and resiliently urged toward an electrically non-conductive support means. Said support means has a recess receiving said inertia body and said recess is provided with angular sides. The inertia mass is surrounded by an electrically conducted casing spaced slightly therefrom. The inertia mass is normally held against the support means and away from contact with said casing but a disturbance thereof either axially or radially will move the support means against such resilient urging either axially or radially to effect contact between said inertia mass and the casing whereby to complete the electrical circuit.

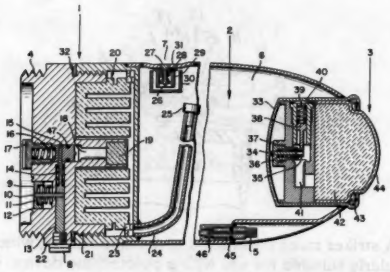


3,685,453

ANTIPERSONNEL MINE DESTRUCT SYSTEM

Joseph T. Hamrick, 6364 Jae Valley Rd. S.E., Roanoke County, Va.

Filed Sept. 11, 1969, Ser. No. 857,190
Int. Cl. F42b *25/12, 13/14*
U.S. Cl. 102—90 **1 Claim**



The invention consists of a device which may be launched from a tube by propulsive means in the same manner as a bazooka. The device in a low trajectory dispenses fuel so as to form a gas-air cloud along the flight path, detonating it after it is formed. The objective of the detonation is to set off any antipersonnel mines below the flight path thereby clearing the path for safe traversal by personnel.

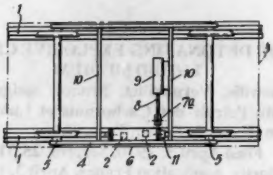
3,685,454

CLEANING OF RAILS

Harry Heggie Ogilvy; Elizabeth Margaret Tuck; David John Miller Dobbs, and John Anthony Rosser, all of London, England, assignors to British Railways Board, London, England

Filed Aug. 17, 1970, Ser. No. 64,345
Claims priority, application Great Britain, Aug. 22, 1969, 42,036/69
Int. Cl. B23k *9/00*
U.S. Cl. 104—1 R **4 Claims**

In apparatus for the treatment of rails, for the purpose of improving wheel-rail adhesion, using a plasma torch or torches supported on a vehicle, means is provided for continuously guiding the torch or torches so that it or they is or are directed along the rail center line or a line parallel thereto. For this purpose, use may be made of an electromagnetic detector mounted on a carrier for the plasma torch or torches and



adapted for transmitting an error signal, proportional to lateral displacement in relation to the rail cent center line, to servo mechanism operative on the said carrier for reducing the said displacement.

3,685,455

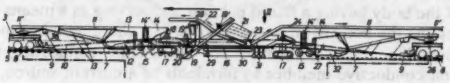
Patent Not Issued For This Number

3,685,456

METHOD AND APPARATUS FOR THE CONTINUOUS REPLACEMENT OF AN OLD TRACK BY A NEW TRACK

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna 1, Austria

Filed Sept. 23, 1970, Ser. No. 74,716
Claims priority, application Austria, Oct. 7, 1969, 9453/69
Int. Cl. E01b *29/02*
U.S. Cl. 104—2 **14 Claims**



A train assembly is moved continuously along a right of way during a track renewal or replacement operation, with a first train section of cars moving on the old track rails and a second train section of cars moving on the new track. In an intermediate trackless section, the ballast is removed, cleaned and redistributed before the ties of the new track are laid while the train assembly advances continuously. The two train sections are held apart a predetermined distance to keep the length of the intermediate track section constant. A reference system preferably controls the height of the ballast bed in the intermediate section, i.e. the amount of ballast removed and then redistributed

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3,685,457

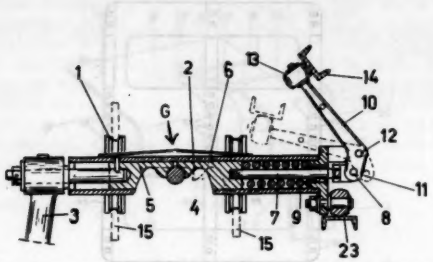
DETACHABLE GRIPPING MEANS FOR MONOCABLE AERIAL TRAMWAYS

Georg Wallmannsberger, Spaurweg 19, Salzburg-Parsch, Austria

Filed Jan. 20, 1970, Ser. No. 876,226
Int. Cl. B61b *7/20*
U.S. Cl. 104—205 **3 Claims**

A detachable gripping unit for the endless traction cable of a monocable aerial tramway in which a stationary jaw and two movable jaws are mounted in a common frame, with a hanger for a car being connected to the stationary jaw, spring means for urging each movable jaw towards the stationary jaw for

gripping the traction cable therebetween and a lever operably coupled to each spring means for displacing the movable jaw



away from the stationary jaw by the coaction of a roller on each lever with a guide rail in the station.

3,685,458

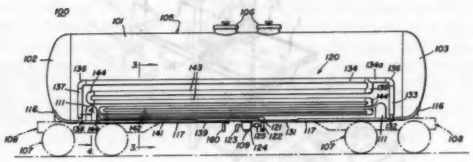
RAILWAY TANK CAR HEATING ARRANGEMENT

Albert E. Price, Brookfield, Ohio, and Robert L. Mansen, Sharon, Pa., assignors to General America Transportation Corporation, Chicago, Ill.

Filed June 30, 1970, Ser. No. 51,093

Int. Cl. B61d *27/00*

U.S. Cl. 105—358 **12 Claims**



A stub-sill railway tank car having a lading outlet centrally disposed on the underside of the tank includes two pairs of spaced-apart saddle bolster plates disposed circumferentially of the tank, two pairs of spaced-apart reinforcing plates respectively disposed adjacent to opposite ends of the tank, each pair of reinforcing plates extending longitudinally of the tank and between each pair of spaced-apart saddle bolster plates and disposed symmetrically with respect to the bottom centerline of the tank to define a passage directly therealong, and a heating assembly on the bottom of the tank including input and output heating conduits disposed in the passage between the reinforcing plates longitudinally of the tank for applying heating fluid directly thereto along the bottom centerline thereof; a system of heating coils and manifolds interconnects the input and output heating conduits.

3,685,459

ROLL CAKE MACHINE

Hartmut Hilbig, Albrechtstrasse 55, Berlin, 41, Germany

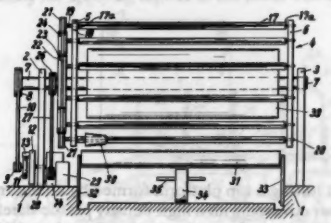
Filed April 2, 1970, Ser. No. 25,010

Claims priority, application Germany, April 9, 1969, P 19 18 767.8

Int. Cl. A21b *3/00*

U.S. Cl. 107—59 **16 Claims**

The machine for the automatic production of multilayer roll cakes comprises a drum-like structure that is intermittently driven for rotation by a star wheel drive. A plurality of rotary rods supporting the roll cakes are removably seated on the periphery of the drum structure. The rods are continuously driven for rotation about their own axis by a rope drive. An



oscillatory cake paste trough is located at the bottom area of the drum structure and is synchronized with its intermittent movement to bring the cake paste sequentially into engagement with the paste spreading rollers of the lowermost rods.

3,685,460

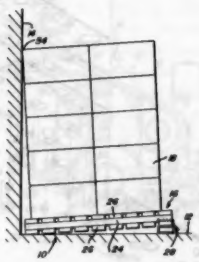
PALLET PROP

Vincent J. Steele, Jr., 1809 Fieldcrest, and John K. Steele, 2000 Sunset Dr., both of Owensboro, Ky.

Filed July 8, 1970, Ser. No. 53,254

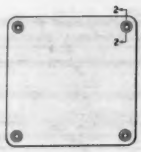
Int. Cl. B65d *19/18*

U.S. Cl. 108—51 **2 Claims**



A spacing block assembly including an integral spring clip portion overlying a spacer portion of the assembly and designed to be utilized in proping up one side marginal edge portion of a pallet with the spring clip portion clampingly engaged with an elongated structural member of the pallet extending along the one side thereof to be blocked or spaced above the support surface upon which the remote side of the pallet rests. The form of the spacing block specifically illustrated in the drawing includes a resilient strap member bent into S-shaped form so as to include three vertically spaced generally parallel flange portions and a spacer block is frictionally gripped and retained between the lowermost flange portion and the intermediate flange portion while a clamp throat or opening is defined between the intermediate flange portion and the uppermost flange portion for receiving an elongated side structural member of a pallet therein with the structural member frictionally gripped between the intermediate flange portion and the upper flange portion.

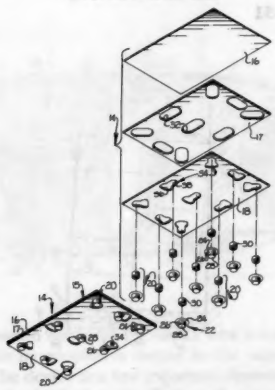
3,685,461
PALLET
Samuel L. Belcher, 2914 Plumbrook, Springfield, Ohio, assignor to Owens-Illinois, Inc.
Filed Oct. 30, 1970, Ser. No. 85,511
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 2 Claims



A pallet having a top platform formed by an internal stiffening member covered with a high-density plastic sheet, a base, a plurality of supporting columns holding the platform in a spaced relationship with the base, and means for holding the platform to the base.

3,685,462
Patent Not Issued For This Number

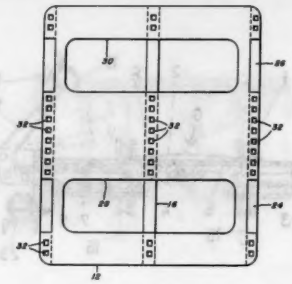
3,685,463
PALLET
William J. Francis, Charlotte, N.C., assignor to Packaging Specialties, Inc., Charlotte, N.C.
Filed Jan. 18, 1971, Ser. No. 107,395
Int. Cl. B65d *19/16*
U.S. Cl. 108—56 10 Claims



A lightweight, inexpensive pallet for supporting a palletized load and which may be readily assembled and disassembled to reduce storage space. The pallet comprises a deck including three interconnected panel members, and a plurality of legs to support the deck above ground level. The lower two panel members include a number of aligned cut-outs for releasably receiving and mounting the legs such that the pallet may be "knocked-down" and the legs stored or shipped separately.

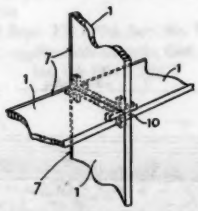
3,685,464
PALLET
Albert J. Ranno, 8228 Southern Blvd., Youngstown, Ohio
Filed Sept. 18, 1972, Ser. No. 73,451
Int. Cl. B65d *19/18*
U.S. Cl. 108—58 4 Claims

A four-way pallet formed in one piece from structural foam plastic material and having features which accommodate rapid molding of the pallet. The pallet is formed in an injection molding process wherein the stringers separating upper and lower decks of the pallet are formed with openings therein



which reduce the effective cross-sectional area of the stringers and thus speed up the curing and cooling of the pallet within a mold.

3,685,465
MODULAR FURNITURE STRUCTURES
Carlo Haumer, Via S. Giuseppe, Mompiano (Brescia), Italy
Filed May 27, 1971, Ser. No. 147,533
Claims priority, application Italy, May 29, 1970, 25268 A/70; July 21, 1970, 27676 A/70
Int. Cl. A47b *47/04*
U.S. Cl. 108—111 4 Claims

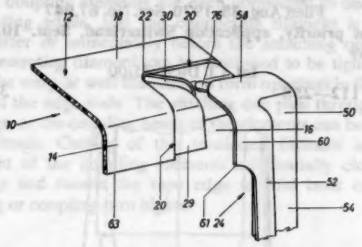


Modular furniture is disclosed which is made up by linking together a series of hollow, internally ribbed panel elements, which are adapted to function as walls and partitions and shelves, through elongated, rectangular joint members which are interposed between the adjacent edges of each pair of panel members; each joint member being provided with a set of fingers and fins projecting from each of its faces that borders on edge of a panel member so that such fingers and fins project, respectively, into sockets and slots formed by the internal ribbing and walls of that panel member and hold it in position. Each finger is preferably formed with two elastic prongs whose facing sides slope toward each other so that they can be spread apart by a wedge member associated with the socket in the panel which that finger enters, to force those prongs against the walls of that socket.

3,685,466
TABLE
Klaus Mehnert, Stuttgart-Zuffenhausen, Germany, assignor to Wilhelm Bofinger Mobelwerkstatten, Ilsfeld, Germany
Filed Oct. 19, 1970, Ser. No. 81,676
Claims priority, application Germany, April 17, 1970, G 70 14 106.9
Int. Cl. A47b *3/06*
U.S. Cl. 108—156 20 Claims

A table top is provided with at least three corners and has an upper surface bounded by a circumferential edge. At least three recesses are provided in the upper surface at respective ones of the corners extending inwardly from the circum-

ferential edge and having a thickness which is smaller than the thickness of the table top. A corresponding number of legs is provided the upper end portions of which are each matingly



received in one of the recesses so that their outer surfaces are flush with the upper surface of the table top. A securing means secures the respective legs releasably to the table top in the respective recesses.

3,685,467

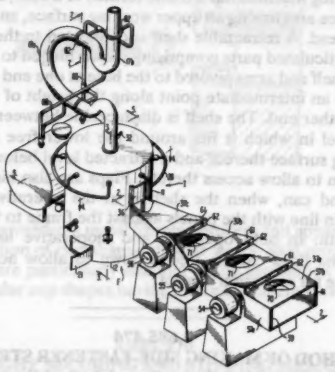
INCINERATOR

Charles W. Morrill, 1803 Wilshire Dr., Charleston, S.C.

Filed March 15, 1971, Ser. No. 124,190

Int. Cl. F23g *5/12*

U.S. Cl. 10—8 R **8 Claims**



An incinerator for burning waste material such as garbage, trash and the like which includes a furnace having an interior and an inlet opening in the furnace side wall through which finely divided waste material is introduced from one end of an elongated trough provided with a plurality of comminuting rolls for grinding and cutting waste material introduced into the other end of the trough and for conveying the waste material through the trough and into the furnace. The furnace inlet opening is provided with a closure and an air spray device which in the open position of the closure distributes the comminuted waste material throughout the furnace interior while simultaneously providing a substitute closure for the inlet opening. The gaseous products of combustion are conducted from the furnace through a stack into which wash water is introduced for removal of the solids.

3,685,468

LAWN AND TURF MAINTENANCE UNIT

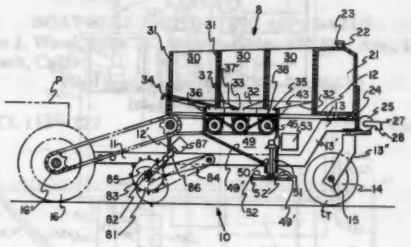
Dennis D. Paige, Spartanburg, S.C., and Lewis E. Coleman, Columbia, Mo., assignors to Automated Lawn Builders of the Midwest, Inc., Columbia, Mo.

Filed Feb. 3, 1970, Ser. No. 8,322

Int. Cl. A01c *7/08, 7/18*

U.S. Cl. 111—11 **23 Claims**

A lawn or turf unit for preparing and/or maintaining a lawn and having all the necessary equipment for doing same, including a plurality of dispensing bins to contain the various materials that should be applied to the particular lawn, a positive metering system for accurately dispensing a predetermined amount of material from each bin, a broadcaster for accurately and properly spreading the material onto the lawn, a combined aerating and rolling device for simultaneously rolling and aerating the lawn, if desired, and a tank and spray head assembly for applying liquids to the lawn. The unit of the



present invention is propelled by a motive power means and is uniquely designed so as to negotiate complex manuvers to enable complete and proper coverage of the lawn. Each material bin is equipped with multiple controls for limiting the amount of material to be dispensed therefrom in addition to a positive metering device for removing materials from the bin at a constant rate whereby a truly accurate amount of material may be applied to the lawn.

3,685,469

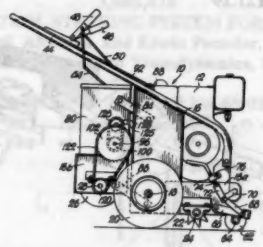
COMBINATION SOIL CONDITIONER AND SEEDER

Chester D. Rogers, Olathe, Kans., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed July 6, 1970, Ser. No. 52,454

Int. Cl. A01c *5/06*; A01b *33/02*

U.S. Cl. 111—87 **1 Claim**



A combination tillage and planting implement utilizes a bank of rotatable cutters for slashing a plurality of trenches into sod, or other mat-like ground cover, and a bank of rotatable discs in alignment with the cutters which roll along the bottoms of the trenches for maintaining the latter open while such material as seed or fertilizer is fed thereinto, for directing the material into the trenches and for pressing the material into the trenches.

3,685,470

STATOR COIL LACING MACHINE

Robert E. Frederick, Garden City, Mich., assignor to Link Engineering Company

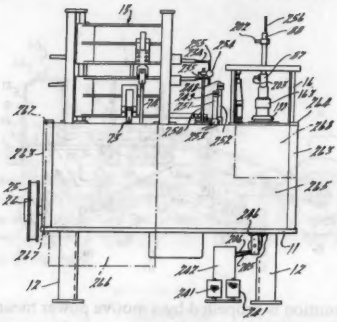
Filed Feb. 25, 1971, Ser. No. 118,868

Int. Cl. D05b *3/00*

U.S. Cl. 112—121.2 **14 Claims**

The lacing machine for stator coils has a table upon which a horizontal shaft is mounted for rotation. A platform supported above the table carries a pair of needle bars on separate

reciprocal supports operating from a cam having oppositely disposed cam tracks thereon. The needle bars are reciprocated toward and away from each other from a drive from the shaft and are angularly oscillated by gear sector from a cam on the shaft. A stator support on the top of the platform is driven in increments of advancement with a dwell therebetween from the shaft and a pair of telescope thread



guide tubes within the stator are reciprocated and angularly oscillated from the shaft to lay loops of two threads on the needles of the needle bars as they project inwardly beyond the coils. The machine operates on one or both end sections of a stator coil and all of the operated elements are driven from the single shaft on the table and timed through the setting of the different elements one in relation to the other.

3,685,471

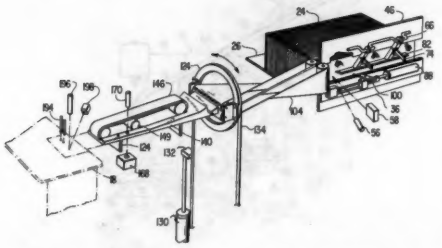
AUTOMATIC TROUSER FLY FABRIC FEEDING MACHINE AND METHOD

Rolfe Reynolds, Meadville, Pa., assignor to Textron Inc.

Filed Sept. 28, 1970, Ser. No. 75,996

Int. Cl. D05b *33/02*

U.S. Cl. 112—121.29 **8 Claims**



An apparatus and method for automatically feeding individual pieces of fly fabric from a stack of such pieces to a zipper sewing machine, wherein the pieces of fabric in the stack have different shades on their opposite sides and it is desired to feed continuously to the zipper sewing machine successive pieces of the fly fabric with the sides thereof having the same shade oriented in a predetermined position. More specifically the method involves sensing the shade of one of the sides of a given piece of fly fabric in a feed hopper, removing the pieces of fly fabric from the feed hopper and then rotating the piece of fly fabric approximately 90° in response to the sensing step so as to orient the piece of fly fabric with its sensed side disposed in a predetermined position for subsequent feeding to the zipper sewing machine.

3,685,472

Patent Not Issued For This Number

3,685,473

SEWING MACHINE

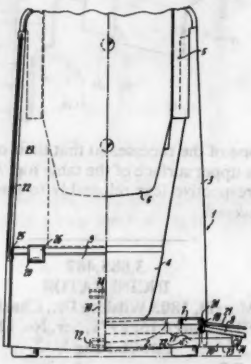
Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Aug. 28, 1970, Ser. No. 67,947

Claims priority, application Switzerland, Sept. 10, 1969, 13649/69

Int. Cl. D05b *75/00*

U.S. Cl. 112—258 **3 Claims**



A sewing machine has a frame formed of a base, a column, a lower free arm having an upper working surface, an upper arm and a head. A retractable shelf is connected to the base by a set of articulated parts comprising panels hinged to three sides of the shelf and arms pivoted to the base at one end and articulated to an intermediate point along the height of each panel at the other end. The shelf is displaceable between an operative level in which it fits around the lower free arm at the working surface thereof and a retracted level below the lower free arm to allow access thereto. Flaps are also hinged to the shelf and can, when the shelf is at the operative level, be folded in line with the panels against the frame to form a case therewith. In both operative and inoperative levels of the shelf, the flaps can be folded down to allow access to the machine for operation thereof.

3,685,474

METHOD OF MAKING SIDE-FASTENER STRINGERS

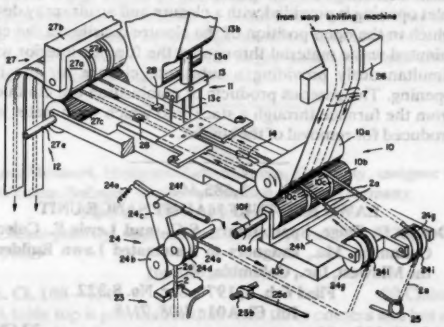
Alfons Frohlich; Marie-Luise Cappel, both of Essen, and Ernst Stubiger, Giessen, all of Germany, assignors to Opti-Holding AG, Germany

Filed Oct. 20, 1970, Ser. No. 82,325

Claims priority, application Germany, April 4, 1970, P 20 16 152.8

Int. Cl. D05b *3/12*

U.S. Cl. 112—265 **4 Claims**



A pair of parallel tapes are simultaneously knit on a warp-knitting machine with a connecting filament joining their con-

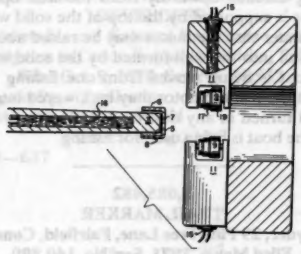
fronting edges. Each tape is formed by a plurality of warp chains laterally interconnected by laid-in weft filaments which span at least three of the wales formed by the chains. The continuous coupling elements are each connected to one of the confronting edges, and the connecting filament is broken either after or immediately before the attaching operation. This connecting filament can be tensioned to be tighter than either the warp or weft filaments to form openings in the tapes adjacent the edge wale. The stitching can pass through these openings, or the coupling heads of the elements can be pushed therethrough. Cutting of this tensioned filament after attachment of the coupling elements substantially closes the openings and causes the tape edge to fold back over the stitching or coupling-turn bights.

3,685,475

PROCESS FOR PRODUCING CUP-SHAPED THIN-WALLED METAL WARES

Neill K. Banks, Jr., 6 Arlington St., Gloucester, Mass.

Filed Sept. 17, 1969, Ser. No. 858,681
Int. Cl. B21d *51/00*; B21b *27/06*
U.S. Cl. 113—120 H **8 Claims**



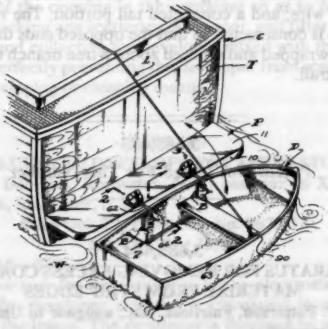
There is provided a metal forming process and apparatus for the production of cup-shaped tubular wares. Said process and apparatus are particularly adapted to the production of thin-walled tubular cup shapes having internally tapered walls.

3,685,476

DINGHY SECURING AND STOWING MEANS

Herbert L. Routery, 825 5th St., Manhattan Beach, Calif.

Filed March 29, 1971, Ser. No. 128,991
Int. Cl. B63b *23/32*
U.S. Cl. 114—43.5 **10 Claims**



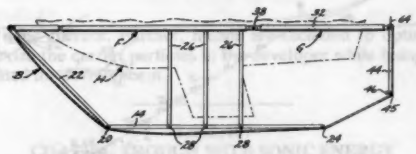
Dinghy securing and stowing means to releasably pivotally secure one side of a dinghy to an adjacent side or surface of a vessel whereby the dinghy is free to pivot and shift vertically upwardly and downwardly relative to the vessel when it is floated and whereby the dinghy can be pivoted upwardly out of the water to a stowed position where its top side opposes and occurs adjacent said surface of the vessel; said means comprising longitudinally spaced support arms projecting laterally from the dinghy and having ball members at their outer ends and spaced socket fittings on said vessel adjacent said surface to releasably establish slack-free pivotal engagement with the ball members.

3,685,477

BOAT HULL PROTECTING APPARATUS

James J. Wood, Suite 703 Security Bldg., 110 Pine Ave., Long Beach, Calif.

Filed Sept. 11, 1970, Ser. No. 71,566
Int. Cl. B63b *59/02*
U.S. Cl. 114—222 **3 Claims**



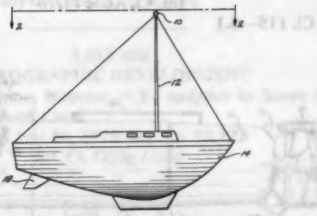
Apparatus for protecting a boat hull from marine growth while the boat is moored in seawater. The apparatus includes a rigid framework having a rear gate. The framework is covered with a bag formed of a flexible sheet of waterproof material that defines a space which encompasses the boat. An anti-fouling chemical is placed in this space to prevent marine growth on the boat hull. The gate and its attached portion of the bag is lowered to provide ingress and egress for the boat to be protected. The flexible bag is attached to the frame by unique means permitting ready replacement of the sheet without the use of special tools, adhesives or mechanical fasteners.

3,685,478

WIND CONTROL STEERING SYSTEM FOR SAILBOATS

John R. Casani, Altadena, and Edwin Pounder, Sierra Madre, both of Calif., assignors to Transdynamics, Inc., Burbank, Calif.

Filed Aug. 19, 1970, Ser. No. 65,027
Int. Cl. B63h *25/04*
U.S. Cl. 114—144 **14 Claims**



A sailboat has a wind control steering system including a windvane located on the boat and coupled to the shaft of a first potentiometer for producing a first set of electrical signals representing the direction of the apparent wind relative to the actual heading of the boat. A manually operative selector device coupled to a second potentiometer develops a second set of electrical signals representing the desired heading of the boat relative to the direction of the apparent wind, and the first and second sets of signals are fed to a closed loop feedback system that compares the signals and produces a steering signal representing the instantaneous heading error. A reversible motor coupled to the tiller controls the position of the rudder, and a feedback potentiometer produces an electrical signal proportional to the instantaneous position of the rudder

relative to the actual heading of the boat. The rudder position signal is compared with the steering signal to produce an error signal for driving the motor to position the rudder so as to reduce the heading error.

3,685,479

ANCHOR-CABLE SYSTEMS

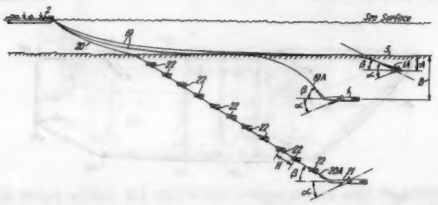
Peter Bruce, 10 Torphichen Place, Edinburgh 3, Scotland

Filed Dec. 19, 1969, Ser. No. 886,539

Claims priority, application Great Britain, Dec. 24, 1968, 61,498/68; Nov. 8, 1969, 54,797/69

Int. Cl. B63b *21/24*

U.S. Cl. 114—206 R **24 Claims**



An anchor for mooring a vessel to a mooring bed includes at least one fluke attached to a shank part of the anchor and inclined relative thereto to cause penetration of the anchor into the mooring bed on horizontal movement of the anchor. Stabilizer fin (or fins) is mounted on an extension of the shank part and spaced from the fluke such that, on penetration of the anchor into the bed, any pivoting of the shank part to decrease the angle of attack of the fluke relative to the bed is counteracted. Also, the anchor-cable may include at least one fin device adjacent the anchor, the fin of the device being inclined such that burial forces are produced by the device to counteract the vertical penetration resistance of the adjacent cable and to constrain the buried portion of the cable to depart from the usual catenoidal configuration and adopt a linear or adverse curvature configuration.

3,685,480

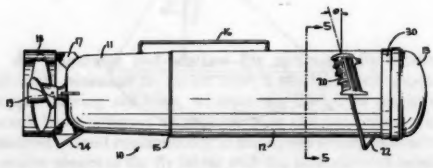
PERSONAL UNDERWATER VEHICLE

George J. Peroni, Miami, Fla., assignor to Seatech Corporation, Miami, Fla.

Filed April 14, 1970, Ser. No. 28,476

Int. Cl. A63c *11/10*

U.S. Cl. 115—6.1 **21 Claims**



Heat from the motor of a sealed underwater vehicle is transferred and dissipated through direct heat transfer paths having sufficient heat transfer capacity to permit the continuous operation of the motor at a safe temperature. The direct transfer path includes an annular disc that supports the rear of the motor and also reinforces the interior of the shell-like body of the vehicle; further reinforcement being provided by the fit of the battery in the vehicle. The nose cone is welded to a standard pipe and a rear dome is removably mounted and sealed to the other end of the pipe by a stretchable elastic band. A spring clip is utilized to retain the internal operating assembly together for ease of assembly and disassembly. Control grips for the vehicle provide an open grip by the diver and distribute the bulk of the pulling force across the length of the second and third sections of the diver's fingers and by friction to the full length and width of the palm.

3,685,481

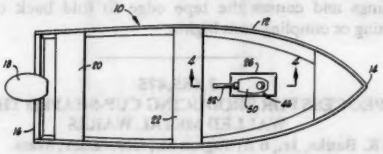
FISHING BOAT

Gilbert G. Mansell, 205 E. Court St., Atoka, Okla.

Filed Oct. 2, 1970, Ser. No. 77,650

Int. Cl. B63b *25/42*

U.S. Cl. 115—35 **4 Claims**



A fishing boat for use with an electrically powered fishing motor wherein the hull of the boat has an opening in the bottom thereof in proximity with the bow of the boat and a solid wall housing extends upwardly from the hull opening. The fishing motor is supported by the top of the solid wall housing in such a manner that the motor may be raised above the bottom of the hull into the well formed by the solid wall housing when the boat is being moved from one fishing location to another, and the fishing motor may be lowered into operating position and turned in any desired direction to maneuver the boat while the boat is being used for fishing.

3,685,482

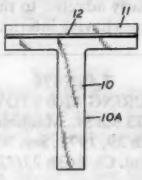
TRAIL MARKER

Ernest A. Ryder, 29 Pine Tree Lane, Fairfield, Conn.

Filed May 6, 1971, Ser. No. 140,880

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 R **2 Claims**



This disclosure is directed to a trail marker formed of readily foldable material having a tie portion reinforced by a length of flexible wire, and a connected tail portion. The reinforced tie portion is constructed so that the opposed ends thereof can be readily wrapped and secured about a tree branch or the like to mark a trail.

3,685,483

Patent Not Issued For This Number

3,685,484

APPARATUS FOR REMOVING EXCESS COATING MATERIAL FROM STRIP EDGES

Robert W. Patterson, Fairfield, Ala., assignor to United States Steel Corporation

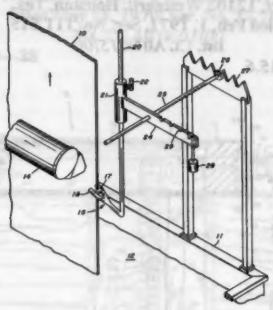
Filed Feb. 23, 1971, Ser. No. 117,987

Int. Cl. B05c *11/06*

U.S. Cl. 118—63 **1 Claim**

An edge wiper for removing excess coating material from a coated strip in a slow speed coating operation in which the

coating weight control is effected by an air knife, includes means for vertical adjustment, a lever arm pivotally supported



and associated with a counterweight to provide a biasing force, and means to transversely adjust the pivot support.

3,685,485

DEVICE FOR PREVENTING SCATTERING OF DEVELOPER

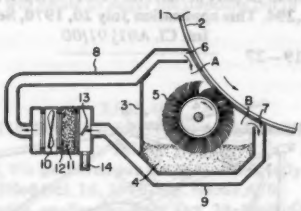
Noboru Kutsuwada, and Katsumi Nagamatsu, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1970, Ser. No. 79,517

Claims priority, application Japan, Oct. 15, 1969, 44/98143; Oct. 15, 1969, 44/98144

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **8 Claims**



An improved device for preventing the scattering of developer applicable to a dry type electrophotographic copying apparatus, especially to portions thereof dealing with developer such as developing means, cleaning means, etc. The device includes a container for containing developing or cleaning mechanism and having an opening formed at a portion thereof, air communication ports disposed at the edge portions of the opening in the container so as to form an air flow for sucking any scattering developer, and filter means for catching and collecting the developer mixed with the air flow, thereby perfectly preventing the developer from scattering out of the developing or cleaning means.

3,685,486

FLUIDIZED DEVELOPMENT APPARATUS

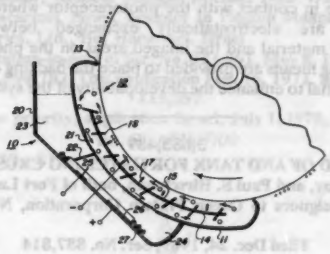
Daniel J. Donalies, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,618

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **6 Claims**

An apparatus for developing a latent electrostatic image wherein the developer material is circulated in a fluidized state past the image. The developer is fluidized by an orbiting member which further acts as a biased development electrode to better develop the electrostatic image. The fluidized developer flow moves in the direction of movement of the surface bearing the electrostatic image to be developed whereby the combined motion of the orbiting electrode and the movement of the image bearing surface results in the developer being propelled at an average velocity equal to the velocity of movement of the image for effective development of the lead-



ing edge thereof. Further, means are included to optimally tonerize the carrier particles in the developer while being circulated for development.

3,685,487

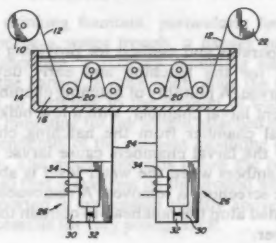
COATING TROUGH WITH SONIC ENERGY ACTIVATING MEANS

Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Wingham, Mass.

Continuation of Ser. No. 614,604, Feb. 8, 1967, abandoned. This application Oct. 24, 1969, Ser. No. 869,282

Int. Cl. B05c *11/00*

U.S. Cl. 118—72 **3 Claims**



Tinning means include an elongated trough having guides means therein defining a path, for the material being tinned, which extends the entire length of the trough. A sonic transducer is acoustically coupled to the trough.

3,685,488

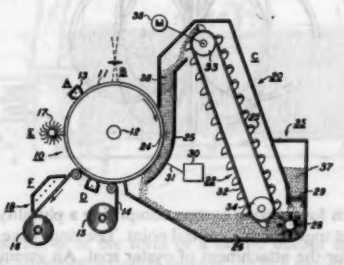
XEROGRAPHIC DEVELOPMENT

Raymond W. Stover, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 10, 1970, Ser. No. 53,723

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **13 Claims**



Apparatus is herein disclosed for developing a latent electrostatic image on the surface of a moving image retaining

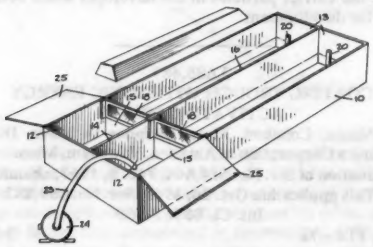
member. An extended electrode is positioned adjacent the moving surface to form a development zone therebetween. Means are provided to move a closely packed flow of two component developer material moving through the development zone in contact with the photoreceptor wherein toner particles are electrostatically exchanged between the developer material and the imaged areas on the photoreceptor. Biasing means are provided to place the backing electrode at a potential to enhance the developability of the system.

3,685,489

METHOD OF AND TANK FOR HATCHING CRUSTACEA

John J. Day, and Paul S. Hirschman, both of Fort Lauderdale, Fla., assignors to Ocean Protein Corporation, New York, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,814
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **23 Claims**



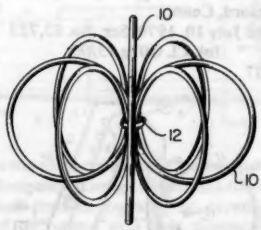
A tank apparatus and method for providing advantageous environment for the hatching and early development of crustacean larvae. A plurality of hatching chambers, each having an adjacent larval chamber, with a low bulkhead separating the larval chamber from the hatching chamber. Light sources near the larval chambers cause larvae to migrate to the latter chambers when the water level is above the bulkhead and the screening is removed. A removable screen mesh can be mounted atop the bulkhead to contain the larvae in the larval chamber.

3,685,490

OYSTER CLUTCH AND ASSEMBLY JIG

David A. Adams, Wilmington, N.C., assignor to Ocean Data Systems, Inc., Bethesda, Md.

Filed July 16, 1970, Ser. No. 55,475
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **4 Claims**



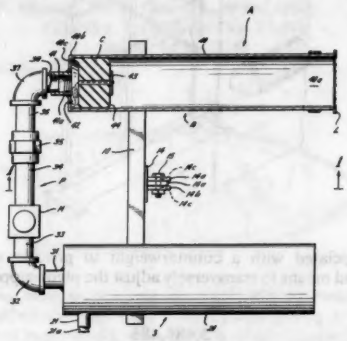
A clutch for growing oysters comprising a plurality of rings connected together at a central point. The rings have surfaces suitable for the attachment of oyster spat. An assembly jig is utilized comprising a horizontal planar surface having a plurality of elongated apertures to support the rings in position for applying a fastener.

3,685,491

METHOD AND APPARATUS FOR RELEASING GAME BIRDS AS TARGETS

Orvis G. Barrett, 12102 Westgard, Houston, Tex.

Filed Feb. 1, 1971, Ser. No. 111,515
Int. Cl. A01k *15/00*
U.S. Cl. 119—15.6 **14 Claims**



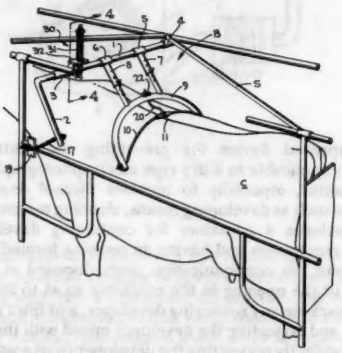
A method and apparatus are disclosed for releasing game birds and placing the birds in flight as targets for hunters and sportsmen to shoot.

3,685,492

COW CONTROLLER

Wallace L. Baker, RFD #1 Box 166 A, Burley, Idaho

Continuation-in-part of Ser. No. 719,175, April 5, 1968, Pat. No. 3,572,294. This application July 20, 1970, Ser. No. 56,407
Int. Cl. A01j *01/00*
U.S. Cl. 119—27 **11 Claims**



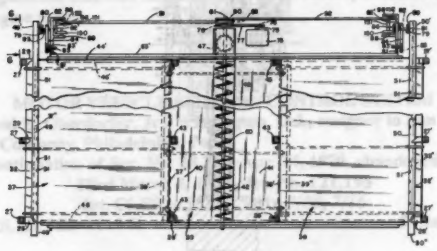
A device and method wherein positive pressure is applied in the sway of the back of an animal to prevent arching of the back to thereby prevent kicking and sidewise movement of the animal. The pressure member, which may be a cable or chain, is curved and flexible as as to fit the contour of the back and so as to be horizontally or longitudinally flexible and positionable as desired. A spanning bar extending down along the sides of the animal positively fixes the ends of the pressure member against upward movement. A rigid pressure section is positioned substantially at the center of the flexible member to increase the pressure at the backbone relative to the sides of the back. The section may be spool shaped so as to engage the sides of the backbone. A spring is utilized to normally retain the pressure member in the raised or inoperative position and means is provided to maintain substantially the same effective spring force throughout the range of adjustable movement of the pressure member.

3,685,493

SELF CLEANING DAIRY STALL DEVICE

Gregory L. Weiland, Jr., R.R. #1, Thief River Falls, Minn.

Filed May 15, 1970, Ser. No. 37,769
Int. Cl. A01k *01/00*
U.S. Cl. 119—28 2 Claims



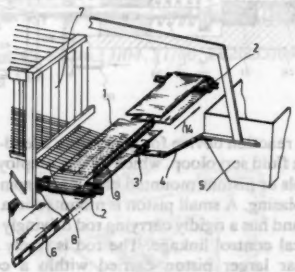
The invention comprises a self cleaning dual stall dairy device having two rows of stalls and a walkway therebetween, with the stalls and walkway being suspended upon stilts or posts. A plastic pan is mounted below the stalls and walkway, and an auger is mounted to the bottom of the pan. Opposed spray pipes are mounted to the upper outer edges of the pan for spraying water into the pan, so that when animal deposits drop through the stalls into the pan they will be washed or moved by the spray from the spray pipes down to the auger and the auger will rotate to auger the deposits out of the pan.

3,685,494

APPARATUS FOR COLLECTING AND CONVEYING EGGS

Roberto Valli, Via IV Novembre n.1/4, Galeata, Italy

Filed Oct. 16, 1970, Ser. No. 81,478
Claims priority, application Italy, Oct. 20, 1969, 6515 A/69
Int. Cl. A01k *5/00*
U.S. Cl. 119—48 5 Claims



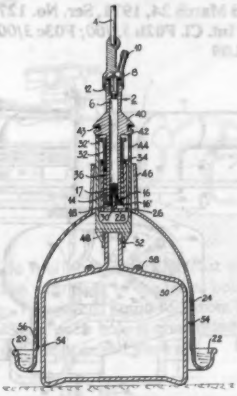
An apparatus for collecting eggs from a poultry battery and conveying the eggs to a collecting platform comprises an endless belt extending between two spaced idler rollers and gripping means for drawing the belt in a direction such that eggs on the conveyor belt are conveyed from a position adjacent a battery to a collecting platform and releasing the belt when the gripping means is moved in the opposite direction.

3,685,495

MULTI-SUPPORTED MOVABLE TROUGH-CONTROLLED WATERER

Itzhak Kantor, Kibbutz Maagan Michael Doar Wa Menashe, Hof Hacarmel, Israel, assignor to Plasson Maagan Michael Industries, Ltd., Hof Hacarmel, Israel

Continuation-in-part of Ser. No. 823,061, May 8, 1969, Pat. No. 3,590,782. This application Feb. 16, 1971, Ser. No. 115,357
Claims priority, application Israel, July 1, 1970, 34,826
Int. Cl. A01k *7/00*
U.S. Cl. 119—81 4 Claims



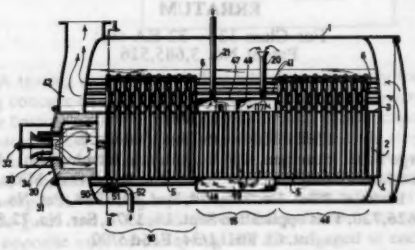
A poultry drinking fountain, particularly for very young chicks, comprises a water trough, a hanger supporting the trough in suspension, a resilient mounting suspending the trough from the hanger, a valve controlling the flow of water to the trough in response to the amount of water therein, a weight, and a mounting for the weight attached directly to the hanger independently of the resilient mounting of the trough to the hanger. The weight projects below the bottom of the water trough so that it may rest on the ground while the water trough is supported in suspension slightly above the ground, where it is accessible for very young chick.

3,685,496

STEAM BOILER HAVING A WATER SPACE TRAVERSED BY A FLUE GAS DUCT

Werner Stiefel, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Sept. 16, 1970, Ser. No. 72,634
Claims priority, application Switzerland, Sept. 23, 1969, 14328/69
Int. Cl. F22b *7/04*
U.S. Cl. 122—140 R 17 Claims



The burner is in the form of a muffle burner in order to complete combustion before entry of the flue gas into the duct and thus create a zone of intense heat at the forward portion of the duct. Open-ended tubes are positioned in the duct transverse to the flue gas flow to conduct the water

therethrough while the first few tubes have the feed water injected therethrough from a source of feed water.

3,685,497

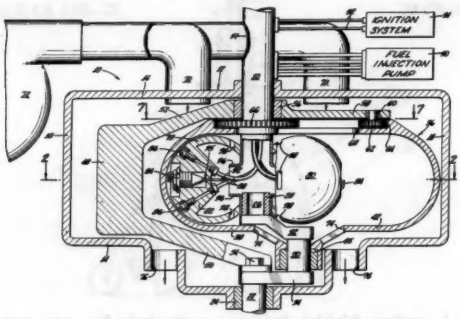
Patent Not Issued For This Number

3,685,498

ROTARY ENGINE

Robert M. Shrewsbury, 3513 Redlands Dr., Bakersfield, Calif., and Jake J. Walcker, 286 Merrywood Circle, Mira Loma, Calif.

Filed March 24, 1971, Ser. No. 127,569
Int. Cl. F02b *53/00*; F03c *3/00*
U.S. Cl. 123—8.09 **10 Claims**



A two-stroke cycle, internal combustion engine in which pairs of hollow pistons are fixedly mounted on opposite sides of a hollow stationary shaft, and radially arranged cylinders revolve about a crank pin on a rotary drive shaft, said shafts being aligned on a common axis. The cylinders also orbit in a circular path about said axis, and the speed and direction of rotational and orbital movement are synchronized by a stationary gear coaxial with said drive shaft and meshing with a ring gear that is centered with respect to the cylinders. There are twice as many cylinders as pistons, and each piston leaves one cylinder at the end of its power stroke and enters another cylinder 180° around from the first at the beginning of its next compression stroke. Fuel is injected into the combustion chambers through nozzles in the pistons. Spark plugs (if used) are mounted on the outer ends of the pistons. Fuel lines and ignition wires pass outwardly through the hollow stationary shaft. Air is blown through the stationary shaft and hollow pistons to cool the latter, and jets of air are blown into the cylinders as each piston enters the cylinder, to scavenge any remaining combustion gas.

ERRATUM

For Class 123—32 EA see:
Patent No. 3,685,526

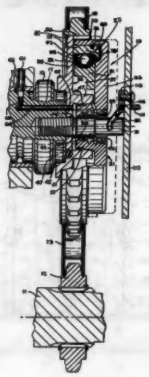
3,685,499

EMISSION CONTROL DEVICE

George B. K. Meacham, 444 W. Lincoln, Birmingham, Mich., and James L. Oliver, 3354 Prairie St., Royal Oak, Mich.

Division of Ser. No. 785,324, Dec. 19, 1968, Pat. No. 3,626,720. This application Sept. 16, 1970, Ser. No. 72,860
Int. Cl. F01l *1/34*; F16d *5/00*
U.S. Cl. 123—90.15 **10 Claims**

A mechanism for varying the phase relationship of a camshaft with respect to a crankshaft. A driven member is secured in fixed relationship to the camshaft and is connected through a helical ball spline to a piston member which is nonrotatably related to the crankshaft. The piston member and the driven member define a fluid chamber therebetween. A shiftable valve member permits flow of fluid to said chamber causing the piston to move axially relative to the driven member, whereby the helical ball spline causes the driven member to rotate relative to the piston, which in turn causes rotation of the camshaft relative to the crankshaft. The valve member may be controlled either manually or automatically in response to an engine operating condition.



3,685,500

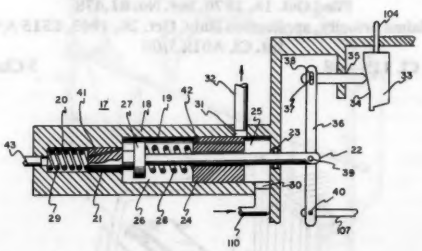
Patent Not Issued For This Number

3,685,501

HYDROMECHANICAL LEAD-LAG CONTROL DEVICE

Thomas Shaw Honda, Scottia, N.Y., assignor to General Electric Company

Filed Nov. 27, 1970, Ser. No. 93,106
Int. Cl. F02d *9/00*
U.S. Cl. 123—108 **11 Claims**



A fluid reaction device for generating a lead-lag function to stabilize a fluid servoloop, which device employs two different area spools or pistons mounted on a single spindle or rod with suitable biasing. A small piston is mounted in a corresponding cylinder and has a rigidly carrying rod drivingly connected to a mechanical control linkage. The rod is freely surrounded by an annular larger piston carried within a correspondingly larger cylinder adjacent the smaller cylinder. A first expansible chamber is thus formed on the side of the larger piston opposite from the smaller piston and a second expansible chamber is formed between the pistons. Variable pressure feed-back fluid is fed into the first expansible chamber and discharged from an outlet port, which may be partially blocked by the larger piston so that fluctuations in the incoming fluid pressure will produce corresponding axial movement fluctuations of the larger piston, which in turn will produce corresponding axial fluctuations in the movement of the

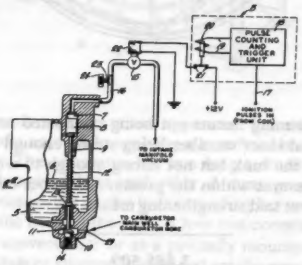
smaller piston in a ratio of their areas due to the driving effect of the fluid within the second substantially closed expansible chamber. Bleed passages are provided from the second expansible chamber in the pistons for reducing the ratio of movement between the pistons for low frequency fluctuations of the inlet pressure, as compared to a higher ratio of movement for high frequency fluctuations. Particularly, the device is well suited for use as a feed-back control in the throttle linkage of an internal combustion engine wherein the fluid fed to the first expansible chamber fluctuates in flow in correspondence with engine speed.

3,685,502

MOTOR VEHICLE EMISSION CONTROL SYSTEM

Paul E. Oberdorfer, Jr., Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation of Ser. No. 28,320, Apr. 14, 1970, abandoned.
Filed March 4, 1971, Ser. No. 121,195
Int. Cl. F02n *23/00*; F01n *3/08, 7/16*
U.S. Cl. 123—119 R **5 Claims**



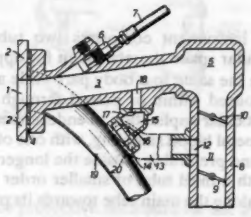
Emission from motor vehicle exhausts of oxides of nitrogen, carbon monoxide, hydrocarbons, and aldehydes is reduced by a combination of selective enrichment of the fuel-air mixture fed by the carburetor to the engine, and an exhaust converter, e.g., a thermal exhaust reactor. The selective enrichment is carried out under low speed, mild acceleration (urban) driving conditions.

3,685,503

FUEL SUPPLY SYSTEMS

Harold Ernest Jackson, Plympton St. Mary, England, assignor to Petrol Injection Limited, Plymouth, Devon, England

Continuation of Ser. No. 756,849, Sept. 3, 1968, abandoned.
This application Aug. 31, 1970, Ser. No. 68,513
Claims priority, application Great Britain, Sept. 4, 1967, 40,383/67
Int. Cl. F02m *13/04, 31/00*; F02b *33/00*
U.S. Cl. 123—127 **5 Claims**



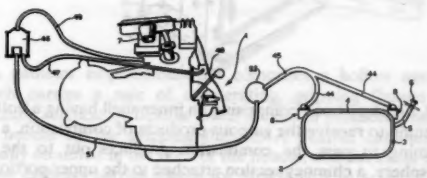
A petrol injection system for an internal combustion engine in which separate main injectors in main air inlet tubes feeding such port are supplemented by a constricted and possibly heated common air inlet tube having a further injector. The supplementary inlet tube is effective during idling and low power running and the main injectors and main air inlet tubes are used for higher powers, the supplementary inlet being phased out.

3,685,504

FUEL TANK VENTILATION IN MOTOR VEHICLES

Giovanni Torazza, Via Cesare Lombroso 25, Turin, Italy, assignor to Fiat Societa Per Azioni, an Italian Joint Stock Company, Turin, Italy

Filed Nov. 12, 1970, Ser. No. 88,748
Claims priority, application Italy, Nov. 14, 1969, 54032 A/69
Int. Cl. F02m *59/00*
U.S. Cl. 123—136 **2 Claims**



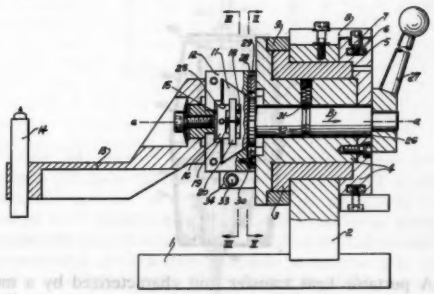
A motor vehicle fuel tank having at least two spaced apart holes on its surface with each of the holes being connected to a fuel vapor trap. To prevent liquid fuel from leaving the tank and entering the trap, each hole is controlled by a float valve connected between the hole and the trap.

3,685,505

TRUEING DEVICE FOR GRINDING WHEELS

Anton Rohrle, Goeppingen, Germany, assignor to Firma Lohf & Tillipaul, Hamburg, Germany

Filed Sept. 8, 1970, Ser. No. 70,305
Int. Cl. B24b *53/06*
U.S. Cl. 125—11 AT **10 Claims**

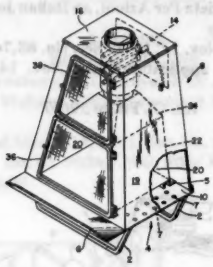


A trueing device for grinding wheels, particularly for trueing concave or convex profiles with a rectilinear movement of the trueing tool. The trueing device has a carrier capable of limited rotary movement determined by adjustable stops and has a slide guide extending at right angles to its pivot axis. A slide is guided for movement on the slide guide and carries the trueing tool. A spring is provided which extends parallel to the slide guide and is located therein. Stop elements are secured to opposite ends of the spring and are engaged at each end with the abutment surfaces on the opposite ends of the slide. The spring normally maintains the abutment surfaces in an aligned condition in the mid position. A driving device is provided which includes a driving shaft which is coaxial with the axis of rotation of the carrier and operates the slide via members that convert its rotary action into rectilinear motion.

3,685,506
FIREPLACE HOOD HEAT SAVER

Margaret A. Mouat, 1248 Poplar Place S., Seattle, Wash.

Filed Nov. 5, 1970, Ser. No. 87,232
Int. Cl. F24b 7/04
U.S. Cl. 126—121 5 Claims

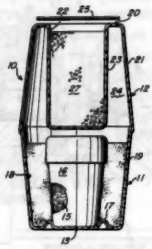


A fireplace hood comprising an inner shell having a bottom opening to receive the gaseous products of combustion, a top opening to pass the combustion products out to the atmosphere, a chimney section attached to the upper portion of the shell and having located therein a plurality of horizontal tubes passing through the chimney section, sealed to the combustion products, but open at the ends to the atmosphere, a fan disposed adjacent to the open-ended tubes to circulate air through the tubes and an exterior shell surrounding the inner shell whereby the exterior surface is maintained at a temperature safe to touch. The exterior shell includes air passages corresponding to the tubes whereby the air heated in the tubes in the chimney as well as the air heated between the shells is exhausted into the room.

3,685,507
HEAT TRANSFER UNIT

William R. Donnelly, Piqua, Ohio, assignor to Readi-Temp Inc., Dayton, Ohio

Filed Nov. 2, 1970, Ser. No. 86,068
Int. Cl. A47g 23/04; F24j 1/00
U.S. Cl. 126—263 23 Claims



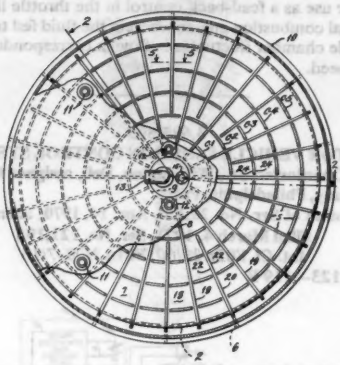
A portable heat transfer unit characterized by a multi-walled container. The container is so formed that wall portions thereof define therein separate pockets or chambers. Disposed in said pockets and separated by said wall portions are at least two separate types of material, the material to be treated and heat transfer material, the latter being activated, when required, by a simple manipulation of the container.

3,685,508
TANK CONSTRUCTION

Le Roy W. Heilmann, 29 Shady Lane, Belleville, Ill., assignor to Nooter Corporation, St. Louis, Mo.

Filed May 18, 1970, Ser. No. 38,128
Int. Cl. A47j 27/16
U.S. Cl. 126—378 6 Claims

A tank bottom having spaced inner and outer members, said inner member being made of relatively thin material having good heat transfer, said spaced inner and outer members forming part of a pressure chamber for heating the contents of said tank, said pressure chamber being subjected to relatively high pressures and temperatures, said inner bottom having strengthening means connected to the outer surface thereof,

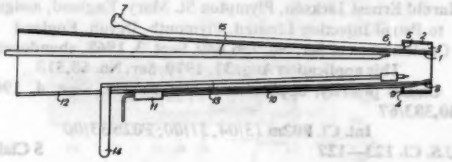


said strengthening means not being connected to said outer member, said inner member being strong enough to hold the contents of the tank but not strong enough to withstand the cyclical pressures within the pressure chamber over a period of use without said strengthening means.

3,685,509
FOETAL BLOOD SAMPLING ENDOSCOPE

Richard Hugh Cameron Bentall, London, England, assignor to National Research Development Corporation, London, England

Filed July 7, 1970, Ser. No. 52,932
Claims priority, application Great Britain, July 9, 1969, 34,589/69
Int. Cl. A61b 10/00
U.S. Cl. 128—2 F 5 Claims



A medical instrument comprises two tubes arranged to define an annular space therebetween for application of suction to adhere the same to a body part while an associated instrument is housed within or passed through the inner tube. This finds particular application to endoscopes, especially amniscopes for foetal blood sampling, with one of the tubes being shorter than and preferably outside the longer main tube at its distal end, with a third tube of smaller order of cross-section passing back along the main tube towards its proximal end.

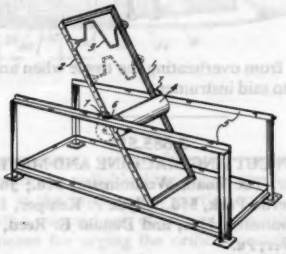
3,685,510
Patent Not Issued For This Number

3,685,511

TREATMENT AND EXERCISE APPARATUS APPLYING TENSION TO THE BACKBONE OF A USER AND BODY MASSAGE

Francisco Godia Alvarez, Consejo de Ciento St. 200, Barcelona, Spain

Filed May 4, 1971, Ser. No. 140,078
Claims priority, application Spain, May 6, 1970, 158299
Int. Cl. A61h *1/02*
U.S. Cl. 128—57 7 Claims



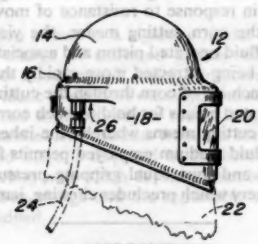
A treatment and exerciser apparatus for stretching the backbone of a user while applying a beneficial massage to the user's body. The apparatus has two longitudinally extending bars laterally spaced from each other. A massage-applying roll is pivotally supported on the bars extending between them for supporting the body of the user. A foot rest constructed either as a fixed transverse bar or as a pivotally mounted pedal bar with two pedals or stirrups is provided axially spaced from the roll and transversely of the bars. A pivotally mounted handle bar having two hand grips for rotating it about an axis transverse to the bars with the arms outstretched parallel to the user of the apparatus is provided so the user stretches his backbone and applies a massage to the upper parts of the back or to his stomach depending upon his position and the axial position of the roll.

3,685,512

HOOD WITH IMPROVED AIR INLET

Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Filed Sept. 8, 1970, Ser. No. 70,198
Int. Cl. A62b *18/04*
U.S. Cl. 128—142.7 3 Claims



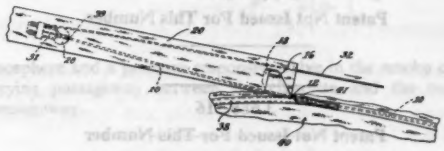
A head and face protective enclosure for use by those working in contaminated environments. An inlet fitting for admitting respiration air to the enclosure located at the rear of the enclosure. A rearward extending air inlet projection that has a bottom wall formed with an opening for the air inlet fitting. The opening is positioned inside of the edge of the bottom wall so that the fitting is protected by the walls of the air inlet projection from impact by falling objects.

3,685,513

INDWELLING CATHETER WITH BREAKAWAY NEEDLE AND LANYARD ADVANCING MEANS

David Bellamy, Jr., Kenilworth, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed May 12, 1970, Ser. No. 36,535
Int. Cl. A61m *5/00*, *25/00*
U.S. Cl. 128—214.4 1 Claim



A catheter emplacement set comprises a hollow needle which carries a pair of cooperating, gripping flanges in pinching relation. A flexible cover is held in position relative the needle by the gripping flanges. A flexible catheter is slidably mounted in the bore of the needle, and the distal end of the catheter carries means for attaching it to a source of parenteral administration fluid. The needle is breakable into separate pieces for removal from the catheter upon manual pulling apart of the gripping flanges. A lanyard is attached to the distal end of the catheter and passes out of the cover adjacent the needle to facilitate rapid and smooth advancement of the catheter through the needle after emplacement of the needle in a blood vessel or the like.

3,685,514

TWO COMPARTMENT SYRINGE

Paul E. Cheney, 76 Summer Road, Fitchburg, Mass.

Filed Sept. 23, 1969, Ser. No. 860,270
Int. Cl. A61m *05/00*
U.S. Cl. 128—218 M 2 Claims

A disposable, two compartment syringe assembly which is separated into a first compartment formed by an outer barrel and a second compartment formed by an inner barrel; the inner barrel being partially inserted into the outer barrel. A tight fitting, but slidable plunger is provided in the inner barrel. Two materials which are desired to be mixed shortly before ejection from the syringe are stored separately in the first and second compartment formed by the inner and outer barrels. An opening at the bottom of the inner barrel is sealed off from the compartment in the outer barrel by means of a cap of extendable and resilient material which has a protrusion fitted in sealing contact with the opening in the inner barrel. At least one opening is provided in the cap and adjacent to the protrusion so that when the plunger is forced downwardly within the inner barrel, the material stored there exerts a pressure against the protrusion and a path is formed from the inner barrel

through the opening in the cap thus permitting the material to be forced into the compartment formed by the outer barrel. There it is mixed with the material in the outer barrel and by pushing the inner barrel into the outer barrel, the inner one acts as a plunger and the mixed material may be forced through a needle attached to the bottom of the outer barrel.

3,685,515

Patent Not Issued For This Number

3,685,516

Patent Not Issued For This Number

3,685,517

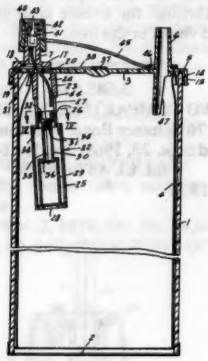
ASEPTIC DISPOSABLE DRAINAGE RECEIVER

Gordon S. Reynolds; Karl A. Pannier, Jr., and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Voy's Inc., Salt Lake City, Utah

Filed Sept. 18, 1970, Ser. No. 73,313

Int. Cl. A61m *1/00*

U.S. Cl. 128—277 **12 Claims**



An aseptic disposable drainage receiver for receiving drainage from the body of a patient after wounding of or surgery performed on the patient. The receiver includes a canister cover from which a flexible canister liner depends, means carried by said cover for connecting the canister and liner to a vacuum or suction system and the liner to a tube from the patient, and means to completely seal such connections to the liner, whereby the liner and cover as a unit with its contents may be aseptically disposed of after a single usage.

3,685,518

SURGICAL INSTRUMENT FOR HIGH-FREQUENCY SURGERY

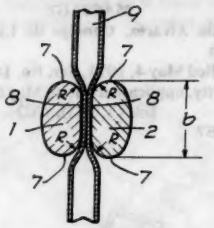
Herbert Beuerle, and Roland Haberlen, both of Tuttlingen, Germany, assignors to AESCULAP-WERKE A.G. vormals Jetter & Scheerer, Tuttlingen, Germany

Filed July 29, 1970, Ser. No. 58,826

Int. Cl. A61b *17/36*; A61n *3/00*; A61b *17/30*

U.S. Cl. 128—303.17 **9 Claims**

Surgical forceps or a similar instrument to be employed in HF surgery for coagulating tissue by means of HF currents in which at least the terminal parts of the jaws of the instrument which are adapted to clamp the tissue are designed so as to prevent them from overheating the tissue when an HF current is conducted to said instrument.



3,685,519

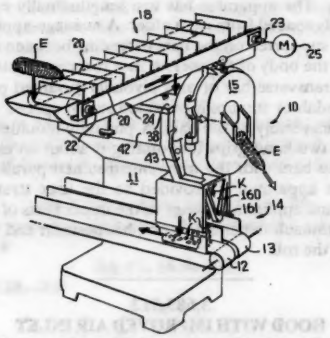
CORN CUTTING MACHINE AND METHOD

Paul F. Cover, Tuc Road, Westminster, Md.; John W. Rife, Rte. 1, Severna Park, Md.; Clyde F. Kemper, 195 Franklin Ave., Westminster, Md., and Donald E. Reed, 129 Broadway, Hanover, Pa.

Filed Aug. 26, 1971, Ser. No. 175,192

Int. Cl. A01f *11/06*

U.S. Cl. 130—9 A **22 Claims**



This disclosure relates to a novel corn cutting machine which includes means for forcing corn ears longitudinally to and through cutting means with the improvement being the use of yieldable fluidic means for moving the corn through the cutting means thus achieving automatic self-regulation of the applied forces in response to resistance of movement of the corn through the corn cutting means, the yieldable fluidic means being a fluid operated piston and associated piston rod with the latter being retracted more rapidly than during the movement of each ear of corn through the cutting means, and fluidically operated means for holding each corn ear centered relative to the cutting means whereby the inherent yieldable nature of the fluid medium employed permits floating of the holding means and thus equal gripping pressure across the corn ear periphery which precludes choking, jamming, etc.

3,685,520

SMOKING DEVICE

Milton P. Chernack, West Hempstead, N.Y., assignor to Delcron Products, Inc., New York, N.Y.

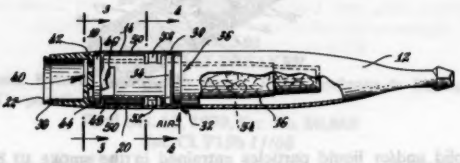
Filed Feb. 1, 1971, Ser. No. 111,490

Int. Cl. A24f *05/04, 13/10*

U.S. Cl. 131—182 **10 Claims**

An improved smoking device for metering a predetermined and selectively variable ratio of smoke and air to a smoker. An elongate cylindrical extension, including a filter cartridge, is

connected to a mouthpiece for insertion within a smoke entry portion. The elongate cylindrical extension includes a radial locking means for engagement with a positioning means of the filter cartridge to prevent radial movement of the filter cartridge relative to the elongate cylindrical extension means; longitudinal mating means for holding the mouthpiece and smoke entry portion longitudinally while allowing relative



rotational movement; circumferential engaging means cooperating with the radial locking means to allow the smoke and air inlets in the smoke entry portion to be held in axial alignment with a selected pair of orifices in an orifice metering plate; and means for urging the orifice metering plate into uninterrupted contact with the smoke inlet. The smoking device may advantageously include an improved cigarette ejection means.

3,685,521

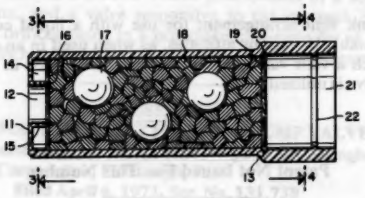
CIGARETTE HOLDER CONTAINING ACTUATED CARBON AND FRANGIBLE CAPSULE

Mortimer Russell Dock, Arlington, Va., assignor to The H-2-O Filter Corporation, New York, N.Y.

Filed June 16, 1970, Ser. No. 46,749

Int. Cl. A24f *07/04, 25/02;* A24d *01/04*

U.S. Cl. 131—187 **1 Claim**



The invention relates to a cigarette holder which employs essentially a charge of activated carbon and at least one frangible water filled capsule which is ruptured prior to use. The holder is made of resilient waterproof material and is provided at one end with a socket or recess designed to accommodate a cigarette. Downstream from the socket and before the mouth end there is disposed in the holder two discs of permeable carbon web which define a chamber in which the activated carbon charge and the rupturable capsule or capsules are contained.

3,685,522

CIGARETTE HOLDER

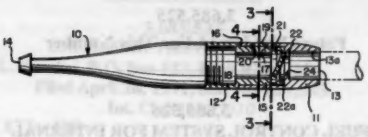
Herbert F. Kleinhans, Tantummaheag Road, Old Lyme, Conn.

Continuation of Ser. No. 862,721, Oct. 1, 1969, abandoned. This application July 16, 1971, Ser. No. 163,433

Int. Cl. A24f *05/04*

U.S. Cl. 131—198 A **2 Claims**

A cigarette holder having means for variably diluting the smoke with atmospheric air is disclosed. The new device has an radial passageway of variable cross sectional area connecting the smoke conveying passageway of the holder with the at-



mosphere and a pressure responsive valve in the smoke conveying passageway between the cigarette and the radial passageway.

3,685,523

TOBACCO SMOKE FILTER

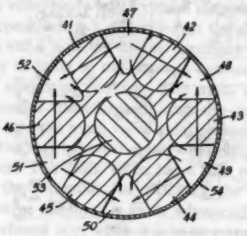
Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Molins Machine Company Limited, London, England

Filed June 5, 1970, Ser. No. 43,775

Claims priority, application Great Britain, June 27, 1969, 32635/69

Int. Cl. A24d *01/04;* A24f *07/04*

U.S. Cl. 131—261 B **2 Claims**



A cigarette filter is provided with axially extending channels divided by axially extending walls of filtering material through which smoke is induced to pass from one channel to another, different channels being blocked at different ends so that smoke enters the filter by one channel and leaves by another. In the preferred embodiment, the filter comprises a core having a resistance to compression from which arms of filtering material extend to the covering wrapper. These arm define smoke passageways alternate ones of which are blocked at opposite ends so that the smoke is constrained to pass from one channel or passageway through a filtering arm to at least one of the adjacent channels.

3,685,524

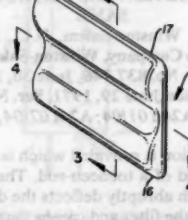
CONTOURED CURLER PAD

Patricia L. Simmons, Akron, Ohio, assignor to P & L Sales Incorporated

Filed June 9, 1971, Ser. No. 151,445

Int. Cl. A45d *6/18*

U.S. Cl. 132—9 **4 Claims**



A rectangular curler cushion made of resilient foam-like material is provided with a longitudinally extending arcuate

depression within which the conventional hair curler may be received to assist the wearer in obtaining more comfort during the time the curlers are being worn.

3,685,525

Patent Not Issued For This Number

3,685,526

FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

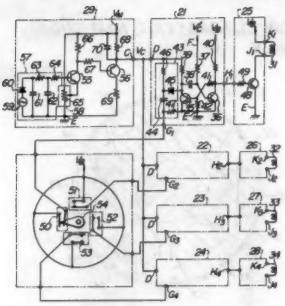
Nobuhito Hobo, Inuyama; Yoshimi Natsume, Toyohashi, and Sumihiro Kaga, Inazawa, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed May 14, 1970, Ser. No. 37,185

Claims priority, application Japan, May 15, 1969, 44/37865

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **8 Claims**



A fuel control system for internal combustion engines comprising a control voltage generation circuit for generating a control voltage representative of the operating conditions of an engine, a capacitor-resistor coupled type monostable timer circuit composed of two transistors and having the time constant fixed at a certain value, said control voltage being applied through the resistor to the collector of that one of said transistors which is in the cut-off state when said timer circuit is in its stable state, a current amplifier circuit adapted to amplify for current amplification the output timing pulse from said monostable timer circuit to operate an electromagnetic metering valve, and a trigger signal generating circuit for producing a trigger signal at the fuel metering time of the engine to trigger said monostable timer circuit.

3,685,527

FILTER CONSTRUCTION AND METHOD OF FORMING SAME

Joseph H. Sherrill, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

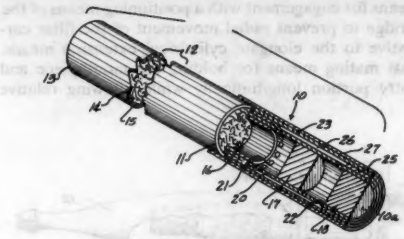
Continuation of Ser. No. 837,746, June 30, 1969, abandoned.

This application June 29, 1971, Ser. No. 158,073

Int. Cl. A24d *01/04*; **A24f** *07/04*, *13/06*

U.S. Cl. 131—10.5 **4 Claims**

A filter construction is provided which is adapted for use at the downstream end of a tobacco rod. The filter embodies a smoke barrier which abruptly deflects the direction of flow of the smoke through the filter and causes the deflected smoke to pass through a plurality of perforations at a high velocity. The high velocity smoke impinges against a smoke impervious surface and is further deflected prior to being emitted from the filter. The impingement of the high velocity smoke causes



solid and/or liquid particles entrained in the smoke to be deposited on the smoke impervious surface.

3,685,528

TANK VENT

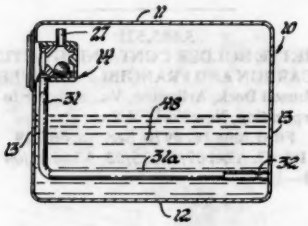
Joseph L. Holland, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 39,703, May 22, 1970, abandoned.

This application Oct. 27, 1971, Ser. No. 193,074

Int. Cl. F16k *17/36*

U.S. Cl. 137—43 **4 Claims**



A tank vent arrangement for use with a liquid container positionable in various attitudes, as when used in an aircraft, in which a vent valve having multiple valve seats in a single ball valve is utilized.

3,685,529

Patent Not Issued For This Number

3,685,530

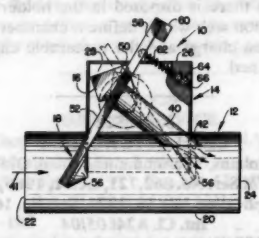
FLOW-ACTUATED BLEED VALVE

William B. Bailey, Manchester, Conn., assignor to The Spencer Turbine Company, West Hartford, Conn.

Filed April 13, 1970, Ser. No. 27,637

Int. Cl. G05d *7/00*

U.S. Cl. 137—98 **12 Claims**



A flow actuated bleed valve for a gas conveying system comprising a housing having a bleed port and mounted on the

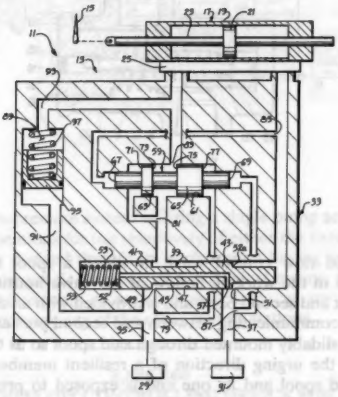
wall of a duct which defines a portion of a main gas flow path in the system. A conduit disposed within the housing and connected to the duct provides a secondary flow path between the main flow path and the port. Flow of gas in the secondary path is controlled by a movable shutter actuated by a flow responsive mechanism including a pivoted vane disposed within the duct in the main flow path. The actuating mechanism is counterbalanced so that the bleed valve may be mounted in any desired position on an associated duct.

3,685,531

CIRCUIT BREAKER

Frank Byford, Huntington Beach, Calif., assignor to Berten Corporation, Irvine, Calif.

Filed Oct. 12, 1970, Ser. No. 80,060
Int. Cl. F15b *11/08*
U.S. Cl. 137—101.11 **21 Claims**



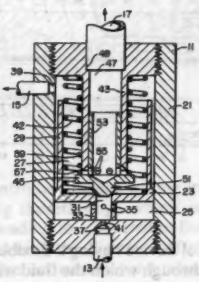
A circuit breaker including a first orifice positionable in a first fluid stream, a second orifice positionable in a second fluid stream, and a valve responsive to the pressure drops across the orifices being in a predetermined ratio for at least substantially reducing the flow rate of the first fluid stream.

3,685,532

AUTOMATICALLY SET PRESSURE DUMP VALVE

Kenneth Kasschau, Los Altos, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 6, 1971, Ser. No. 131,738
Int. Cl. F16k *31/143*; F04b *49/10*
U.S. Cl. 137—107 **7 Claims**



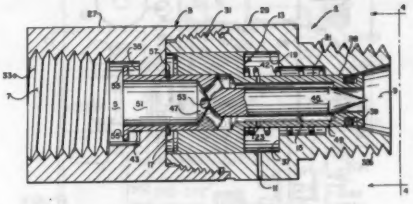
An automatic reset pressure dump valve which trips a motive steam supply valve for a turbine by placing pressurized fluids supplied to the motive steam valve in communication with a drain to rapidly drop the pressure of the pressurized fluid when the pressure of the fluid drops below a predetermined amount, and which resets itself as the fluid pressure rises above the predetermined amount.

3,685,533

UNLOADER VALVE ASSEMBLY

Joseph L. Krechel, P.O. Box 122, High Ridge, Mo.

Filed April 26, 1971, Ser. No. 137,395
Int. Cl. F16k *17/10*
U.S. Cl. 137—117 **15 Claims**



An unloader valve for air compressors or the like comprising a valve body having a passage therethrough, an exhaust port through the valve body wall from an intermediate portion of the passage constituting a chamber to the exterior of the body and a main valve member and an auxiliary valve member which are axially slidable in the passage between a retracted position and an advanced position. The main valve member has an axial passage therethrough and the auxiliary valve member extends into the main valve axial passage to block the flow of air therethrough when the valve members are in their retracted positions. The main valve has a first portion axially movable within the chamber for blocking the exhaust port when the main valve member is in its advanced position and unblocking the exhaust port when it is in its retracted position and a second portion engageable with the outlet end of the valve body passage for closing the latter when the main valve is in its retracted position. A transfer port is provided for communication between the main valve axial passage and the exhaust port when the latter is unblocked to unload the compressor.

3,685,534

VENT SEALS

John F. Straitz, III, Cheltenham, Pa., assignor to Combustion Unlimited, Incorporated, Elkins Park, Pa.

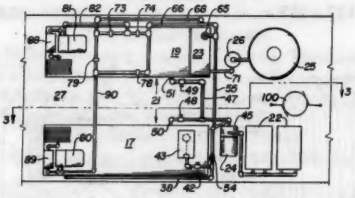
Filed April 9, 1971, Ser. No. 132,796
Int. Cl. B01d *45/02*; F15d *1/02*
U.S. Cl. 137—171 **7 Claims**

A vent seal is provided which includes an outer cylindrical housing having an inlet and an outlet pipe, a plurality of inner baffle plates within the housing forming a seal, and an optional upper outlet baffle in the outlet pipe.

3,685,535
MOBILE WASHING APPARATUS

Russell D. Cable, Flora, and Homer K. Brenneman, Delphi, both of Ind., assignors to Porta Service Inc., Lafayette, Ind.

Filed April 9, 1971, Ser. No. 132,676
Int. Cl. B08b 3/02; B60s 3/06; B05b 7/00
U.S. Cl. 137—265 8 Claims

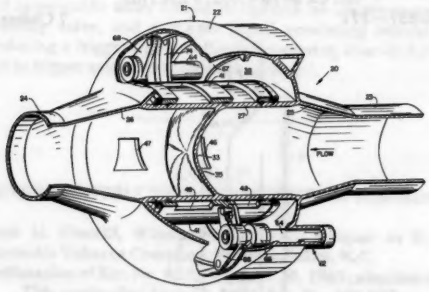


A mobile washing apparatus having a van truck with a pair of water storage tanks mounted therein and connected to high pressure outlet hoses. A pair of soft water tanks are connected to the outlet of said water storage tanks and route water to a hot water storage tank which is connected to a hot water heater. A water meter is provided to measure the flow of water from the storage tank and from the inlet water hose. Cold water and soft water is provided through various solenoids. A pair of high pressure pumps force the water past a pair of chemical injectors to the high pressure hoses which are extendable from the truck.

3,685,536
VALVE ASSEMBLIES

Earl Allan Bake, Pleasant Hills; Eldert B. Pool, Fox Chapel Borough; Andrew Hankosky; Bertram J. Milleville, both of O'Hara Township, and John Hyde Fowler, Shaler Township, all of Pa., assignors to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed March 20, 1970, Ser. No. 21,264
Int. Cl. F16k 49/00
U.S. Cl. 137—338 15 Claims

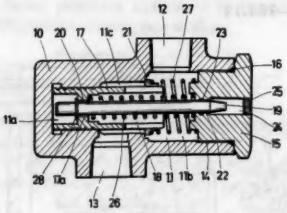


A valve assembly for controlling the flow of fluids such as liquid sodium at high temperature comprises a body having internal separate inlet and outlet chambers surrounded by an annular plenum chamber and fixed ports providing fluid communication between the plenum chamber and the respective inlet and outlet chambers. Rotary or slidable valve members are shiftable for controlling fluid flow through the chambers. A rotatable actuating shaft is operably connected to the shiftable valve member and it projects out of the valve body into an enclosing housing containing a thermally sensitive freeze seal means and mounting a heat radiating device.

3,685,537
FLUID FLOW CONTROL VALVE

Yasuo Kita, and Tadao Hayashi, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto-fu, Japan

Filed April 14, 1970, Ser. No. 28,391
Int. Cl. F16k 17/26
U.S. Cl. 137—493.6 12 Claims

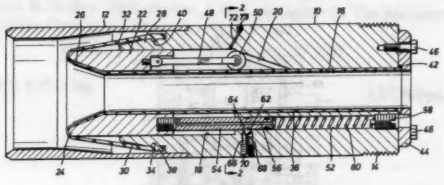


A fluid flow control valve in which a spool is slidably disposed in the working hollow of the valve housing formed with first and second ports and is provided with an orifice portion for communicating between said second port and hollow; a rod is slidably mounted through said spool so as to move at least in the urging direction of a resilient member together with said spool and its one end is exposed to pressure of a value lower than that in said two chambers, whereby the balancing movement of the spool may determine the opening of the orifice portion in such a manner as to reduce the discharge of fluid under pressure as a value of fluid pressure in the side of the first port increases.

3,685,538
FLUID FLOW CONTROL DEVICE

Charles E. Sullivan, 15806 Buccaneer Lane, Houston, Tex.

Filed Sept. 21, 1970, Ser. No. 73,690
Int. Cl. G05d 7/01
U.S. Cl. 137—504 10 Claims

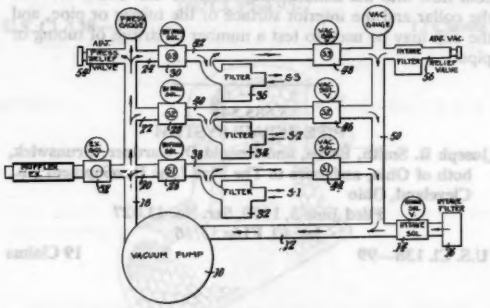


A fluid flow control device having a flexible, resilient sleeve forming a flowway through which the fluid whose flow is to be controlled may flow and including mechanism responsive to an increase in the rate of flow of the fluid beyond a predetermined rate for causing the sleeve to close. The device is constructed and arranged so that the operating parts of the sleeve actuating mechanism are enclosed by the sleeve to isolate the same from contact with the flowing fluid.

3,685,539
MULTIPLE STATION COMBINATION VACUUM-PRESSURE SYSTEM

William H. Warren, East Brookfield Road, North Brookfield, Mass.

Filed , Ser. No. 95,526
Int. Cl. B01d 23/00
U.S. Cl. 137—565 2 Claims

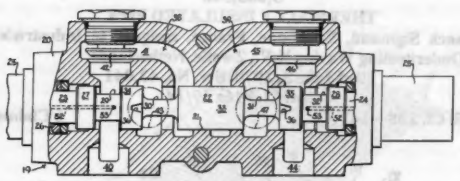


A vacuum-pressure system utilizing a single pump serving a plurality of stations for use selectively of either the vacuum or the pressure derived therefrom, each station having separate controls, by manual, electrical or mechanical means, providing either the vacuum or pressure, selectively, at any station without influencing any of the other remote stations.

3,685,540
FLUID FLOW CONTROLLING DEVICE FOR REVERSIBLE FLUID MOTORS

Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Jan. 18, 1971, Ser. No. 107,019
Int. Cl. F16k 11/07
U.S. Cl. 137—596.13 9 Claims

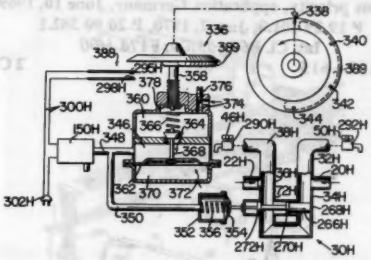


A fluid flow controlling device having independent service passages extending therethrough which provide portions of the service lines leading to a reversible fluid motor from the control valve governing the direction of motor operation. A single fluid pressure actuatable valve element in the device functions as a counterbalance valve and acts to restrict return flow of motor exhaust fluid through either service passage in consequence of decrease in the pressure of source fluid flowing through the other service passage to the motor. Check valves can be located in portions of the service passages so as to be bypassed by return flow of motor exhaust fluid.

3,685,541
CONTROLLER AND MIXER OF PLURAL FLUIDS AND METHODS

Michael J. Caparone; Theodore J. Dykzeul; Edward B. Lynwood, and Henry C. Braucksick, all of c/o Grayson Control Division, Robertshaw Controls Company, Long Beach Blvd. at Long Beach Freeway, Long Beach, Calif.

Division of Ser. No. 684,760, Nov. 21, 1967, Pat. No. 3,536,097. This application June 22, 1970, Ser. No. 59,817
Int. Cl. F16k 19/00
U.S. Cl. 137—599 4 Claims

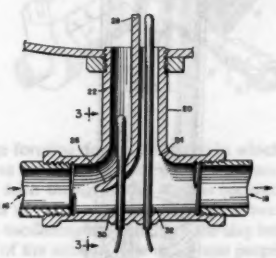


This application discloses a controller and mixer of plural fluids. A hot water and cold water control arrangement is disclosed, including a mix valve construction with means to supply undiluted hot water, or hot water diluted with cold water to varying ratios. The ratios are determined by selecting controllers, such as buttons, dials, cam wheels, and the like. These selectors determine whether undiluted hot water is supplied to the mix valve or whether various ratios of hot water and cold water are supplied to the mix valve. Also, a cold water valve is provided which is supplied with only cold water. The user may open the mix valve and obtain a desired volume of water, and he may manipulate the selectors to determine the temperature of the water which will be supplied to such mix valve. If he desires only cold water, he opens only the cold water valve. These valves may be connected to a unitary faucet, shower head, washing machine, and any other apparatus for using the water so supplied. Also, these valves may be connected to individual faucets and the like.

3,685,542
FLUID HEATER BY-PASS TEE

Paul G. Daughirda, Chicago, Ill., assignor to Rheem Manufacturing Company

Filed Nov. 6, 1970, Ser. No. 87,426
Int. Cl. F24d 3/00
U.S. Cl. 137—599.1 5 Claims



An improved tee shaped fitting for the heating system of a swimming pool. The fitting includes a water inlet and outlet aligned on a common axis and a bifurcated passage joined perpendicular to the axis of the inlet and outlet. The bifurcated passage includes first and second channels defined by a vane, the first channel being connected to the inlet, the second

channel being connected with the outlet. The vane extends into the inlet and diverts only a portion of fluid through the first channel to a water heater. The second channel directs water to the outlet where it commingles with the fluid which flows past the diverting vane.

3,685,543

DEVICE FOR THE SPREADING OF CONCRETE

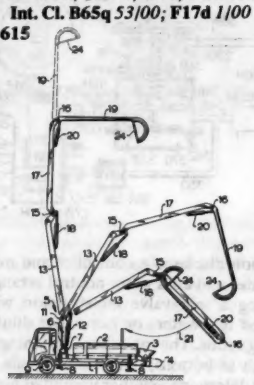
Friedrich Schwing, Rathausstrasse 126, and Bernard Meinken, Rattbruchstrasse 73a, both of Wanne-Eickel, Germany

Filed June 9, 1970, Ser. No. 44,684

Claims priority, application Germany, June 10, 1969, P 19 29 401.0; Jan. 7, 1970, P 20 00 382.1

Int. Cl. B65q *53/00*; F17d *1/00*

U.S. Cl. 137—615 **2 Claims**



A machine for delivering concrete from a vehicle to remote locations, which includes an articulated sectional mast having piston and cylinder assemblies enabling adjustment through an arc of 180°. The concrete feed pipes or tubes are carried by the mast sections for conveying concrete from the vehicle to the outer end of the mast structure. The sections of the mast can be folded upon each other in a unique manner to enable convenient transportation thereof from place to place.

3,685,544

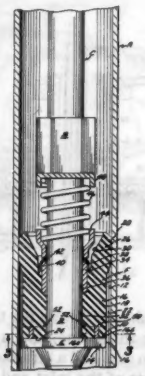
HIGH PRESSURE PACKING CUP

Frank C. Ball, Long Beach, and Willard E. Knapp, Lake San Marcos, both of Calif., assignors to Hydro-Test, Inc., Long Beach, Calif.

Filed Feb. 5, 1971, Ser. No. 112,971

Int. Cl. F16l *55/10*

U.S. Cl. 138—90 **5 Claims**



A packing cup that is mountable on a collar secured to a mandrel to hydraulically test tubing or pipe at high fluid pressures, and without the elastomeric material defining the cup cold flowing to a detrimental degree. When the cup and mandrel are disposed within the interior of tubing or pipe, and the cup subjected to fluid pressure, the cup is deformed towards the collar to radially expand into fluid sealing contact with the interior surface of the tubing or pipe being tested, but with the portion of the cup adjacent the collar not expanding radially to the degree that the portion of the cup situated thereabove. Due to this limitation of radial expansion of said lower portion there is a minimum tendency of the elastomeric material to cold flow into the annulus-shaped space that exists between the collar and the interior surface of the tubing or pipe, and the cup may be used to test a number of strings of tubing or pipe.

3,685,545

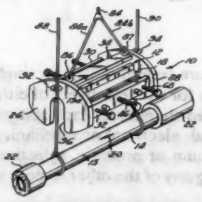
PIPE REPAIR SYSTEM

Joseph B. Smith, Berea, and Ronald D. Gardner, Brunswick, both of Ohio, assignors to The Pipe Line Development Co., Cleveland, Ohio

Filed June 3, 1970, Ser. No. 43,027

Int. Cl. F16z *55/16*

U.S. Cl. 138—99 **19 Claims**



A fixture and a method for underwater installation of a device, such as a repair coupling, on a pipe are provided. The fixture includes a frame assembly having mounting means adapted to retain the device in a retracted position clear of the pipe and guide means to engage the pipe and maintain the frame in a predetermined position with respect to the pipe. The mounting means is operable to move the repair coupling to an installation position against the pipe while the guide means maintains the frame assembly in a stationary position on the pipe. With this invention the manual handling of the repair coupling is virtually eliminated and the time required for installation is greatly reduced.

3,685,546

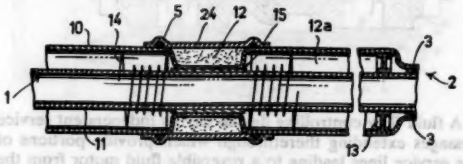
THERMALLY INSULATED PIPE

Franck Sigmund, Eaubonne, France, assignor to Industriele Onderneming Waving N.V., Zwolle, Netherlands

Filed June 3, 1970, Ser. No. 43,041

Int. Cl. F16z *59/14*

U.S. Cl. 138—141 **6 Claims**



A heat insulated pipeline comprising a number of metal tubes welded together end-to-end. Each tube is surrounded by a layer of heat insulating material, such as polyurethane foam, which in turn is enclosed by a protective layer of an impervious material, such as a thermoplastic covering. Intermediate partitions are disposed for connecting the protective layer and

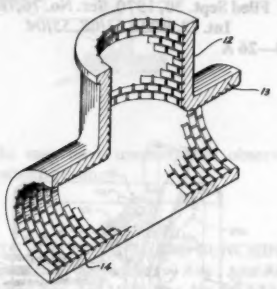
the surface of the metal tubes to permit injection of the foam into the complete space defined between the protective layer and the tube.

3,685,547

INTERNAL CONFIGURATION OF PIPES AND PRESSURE PARTS

William H. Tuppeny, Jr., Rockville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed April 28, 1970, Ser. No. 32,572
Int. Cl. F16l *9/02*
U.S. Cl. 138—178 12 Claims



A metallic pressure part for containing a flowing fluid and offering protection from thermal shock due to temperature changes of the fluid. The inner surface comprises a plurality of lands and furrows with the lands not exceeding 1 ½ inches in any direction. The furrows are one-eighth inch wide and three-eighths inch deep.

3,685,548

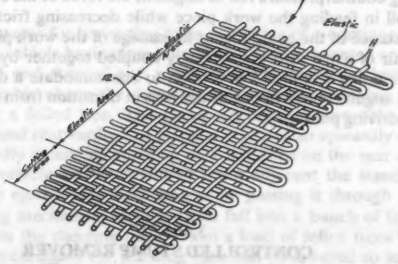
Patent Not Issued For This Number

3,685,549

ELASTIC AND NON-ELASTIC NARROW FABRIC AND METHOD AND APPARATUS FOR MANUFACTURING THE SAME

Richard E. Goff, 35 Lamson Road, Barrington, R.I., and Antonio Schiappa, 240 Division Street, Pawtucket, R.I.

Filed May 12, 1969, Ser. No. 823,661
Int. Cl. D03c *19/00;* D03d *15/08*
U.S. Cl. 139—24 1 Claim



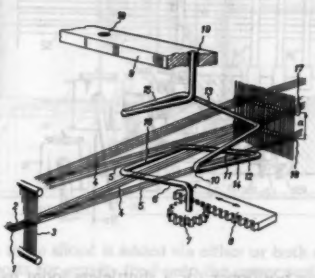
A strip of narrow woven fabric having elastic sections and non-elastic sections predeterminedly spaced along the length of the fabric. The fabric is continuously woven with areas having less picks per inch than other areas so that the areas containing the fewer picks are elastic and the other areas are non-elastic with spaced areas woven to provide smooth cutting areas for manufacturing a plurality of strips of narrow material.

3,685,550

METHOD FOR SHEDDING IN WEAVING MACHINES AND DEVICE FOR PERFORMING THE METHOD

Allan William Henry Porter, Lustmuehle/Aaargau, Switzerland, assignor to Adolph Saurer Ltd., Arbon/TG, Switzerland

Filed May 5, 1970, Ser. No. 34,647
Claims priority, application Switzerland, May 16, 1969, 7516/69
Int. Cl. D03c *13/00*
U.S. Cl. 139—55 6 Claims



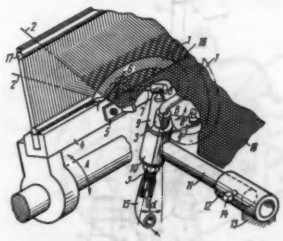
In a weaving apparatus in which the warp threads are fed through healds or heddles to a beating-up reed, upon initiation of the formation of a shed by the healds, a spreader device is inserted into the shed between the healds and the reed to continue formation of the shed. The spreader device is a coil structure arranged to rotate, about an axis vertical to the shed, between a zero position, in which the coils are substantially clear of the shed threads, and an inserted position, in which the coils support the shed threads at their maximum separation.

3,685,551

SELVAGE FORMING DEVICE FOR LOOMS

Alexei Nikolaevich Parshin, Nagornaya ulitsa, 34, korpus 43, kv. 53, Moscow, U.S.S.R.

Filed July 17, 1970, Ser. No. 55,724
Claims priority, application U.S.S.R., July 22, 1969, 1350941
Int. Cl. D03d *47/48*
U.S. Cl. 139—122 S 2 Claims

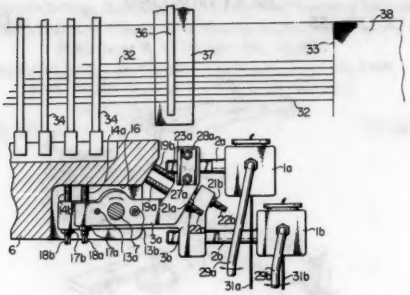


A selvage forming device for looms in which a suction tube which serves for catching the ends of a beaten up weft thread and laying such thread in the shed is secured on a pin connected with the slay or batten through a mechanism for imparting the oscillating movement of the slay into an oscillating movement of the suction tube in a plane perpendicular to the movement of the slay.

3,685,552

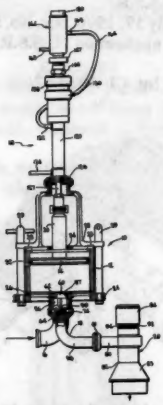
Patent Not Issued For This Number

3,685,553
NOZZLE POSITIONER
Toemon Sakamoto, Hamamatsu, Japan, assignor to Enshu Limited, Shizuoka-ken, Japan
Filed June 16, 1971, Ser. No. 153,588
Int. Cl. D03d 47/28
U.S. Cl. 139—127 P 2 Claims



A nozzle positioner for a shuttleless loom having one or more nozzles for emission of weft-propelling fluid such as water jet picking purpose wherein three sets of thread engagements are provided so as to carry out multi-directional precise adjustment of fluid emission by the nozzles in a manner quite independent from direction to direction.

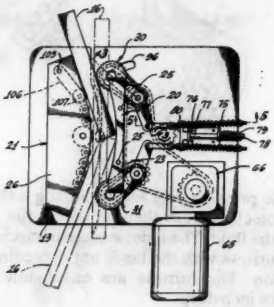
3,685,554
METERING DEVICE
Robert B. Encke, Mount Vernon, Iowa, assignor to Cherry-Burrell Corporation, Chicago, Ill.
Filed April 9, 1971, Ser. No. 132,688
Int. Cl. B65b 3/18, 3/22
U.S. Cl. 141—59 11 Claims



A pump for dispensing a metered amount of liquid, such as milk, having a reciprocating pumping cylinder. Dispensing into the ultimate container is through a nozzle located above a conveyor path and connected to the pumping cylinder outlet by a conduit. The nozzle opens and closes in response to fluid pressure. It is designated to minimize foaming while providing fast dispensing and maintenance-free operation. To allow the pumping cylinder to be driven at high speed on its intake stroke, a damping device is provided which cushions the end of this stroke and is arranged to operate independently of changes which may be made in the length of the stroke.

3,685,555
Patent Not Issued For This Number

3,685,556
CONTOUR CUTTING APPARATUS
Don C. VanSickle, 1435 Northview Place, Redlands, Calif.
Filed Sept. 30, 1970, Ser. No. 76,783
Int. Cl. B23d 53/08, 55/04
U.S. Cl. 143—26 A 11 Claims

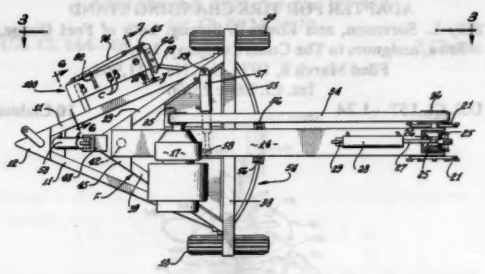


A work feeding apparatus for power tools of the class having a cutting tool operating in a fixed zone of a stationary work table. A pair of opposed guide means fixed on opposite sides of the tool zone define a channel through which successive work pieces advance to be cut by the tool, the pair of guide means being of a predetermined profile to effect cutting of a desired straight and/or curved contour in each work piece. A pair of power-driven feed rolls are positioned at entrance and exit ends of the channel, each being independently biased into driving engagement with the work piece to accommodate varying angularities of the work piece relative to the tool. The pair of feed rolls are also counterbalanced to be equally offset from the blade during straight cuts in the work piece. The feed roll at the entry to the channel is yieldably linked to an opposing counterpressure roll to augment the force of the entry feed roll in feeding the work piece while decreasing frictional resistance of the guide means to passage of the work piece. The pair of drive rolls are drivingly coupled together by a means including a limited lost motion to accommodate a difference in angular speed of one of the rolls in transition from an idle to a driving phase.

3,685,557
CONTROLLED STUMP REMOVER
Ernest F. Groce, Pomona, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.
Filed July 23, 1970, Ser. No. 57,539
Int. Cl. A01g 23/06
U.S. Cl. 144—2 N 8 Claims

A stump removal machine includes a control console for actuator mechanism controlling a power driven stump cutter carried, for example, on a vehicle. The console is advantageously supported for bodily displacement between

retracted and extended positions relative to the vehicle so that an operator may displace the console to extended position



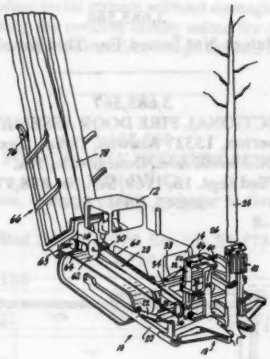
from which he may have unobstructed observation of the cutter during stump cutting.

3,685,558

APPARATUS FOR FELLING AND BUNCHING TREES

Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.

Filed Nov. 18, 1970, Ser. No. 90,633
Int. Cl. A01g 23/02
U.S. Cl. 144—3 D 4 Claims



Apparatus for harvesting trees consisting of a continuously moving vehicle having tree severing apparatus mounted on the forward end thereof and a pass-through clamp mechanism positionable above the severing apparatus for clamping and holding a felled tree. The clamp apparatus is movable upwardly and rearwardly to a position adjacent an upwardly and rearwardly extending standing rack mounted on the rear end of the vehicle and is operable, when adjacent the standing rack, to eject a tree held therein by passing it through the clamping mechanism so that it can fall into a bunch of trees stored on the standing rack. When a load of felled trees has been accumulated the standing rack can be lowered so as to discharge the bunch of trees accumulated thereon either in the field or at a selected deposit point.

3,685,559

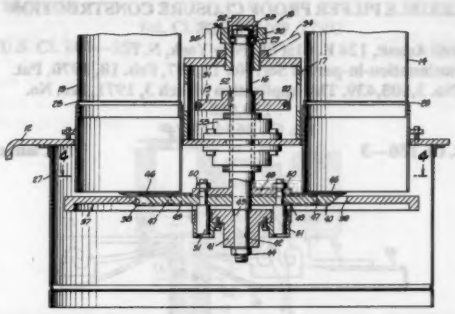
Patent Not Issued For This Number

3,685,560

PRODUCE SLICING APPARATUS

Robert L. Siegmann, Hacienda Heights, Calif., assignor to Brothers' Metal Products, Inc., Montebelli, Calif.

Filed April 29, 1970, Ser. No. 32,994
Int. Cl. B26d 4/28
U.S. Cl. 146—124 3 Claims



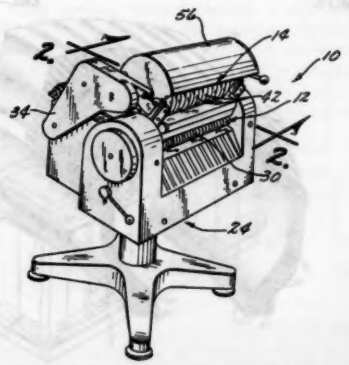
Produce to be sliced is added via either or both of a pair of entrance ports for gravity feed onto the upper surface of slicing members. Each slicing member includes a parabolic knife blade that is adjustably and removably mounted within a pressure plate, such that the knife blade can be positioned to any particular location above the surface of the pressure plate within the operative limits of the equipment. By means of a threaded screw attached to each of the blades, they may be positioned as a unit to an exact spacing with respect to the major planar surface of the carrier such that a produce is added through the ports, it is sliced to a thickness determined by the spacing between the blade members and the blade pressure plate surface. A continuous speed control is provided for the power equipment which rotates the carrier and blade member assemblies.

3,685,561

SKINNING AND SLASHING MACHINE

Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed March 18, 1971, Ser. No. 125,778
Int. Cl. A22c 17/12
U.S. Cl. 146—130 8 Claims



A skinning and slashing machine comprising a frame means having a skinning blade means mounted on the frame means which removes the skin from the meat product to be skinned as the meat product is moved therepast. A plurality of spaced apart, flat slashing blades are rotatably mounted on the frame means adjacent the blade means and are adapted to slash the

meat product to permit the inspection thereof. The blades have a plurality of staggered and spaced apart notches formed in the peripheries thereof which engage the meat product to pull the meat product therethrough and to force the meat product past the skinning blade means.

3,685,562

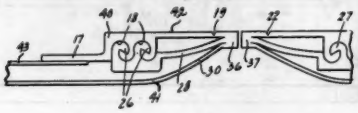
FLEXIBLE PILFER PROOF CLOSURE CONSTRUCTION FOR BAGS

Steven Ausnit, 124 E. 61st St., New York, N.Y.

Continuation-in-part of Ser. No. 12,187, Feb. 18, 1970, Pat. No. 3,608,439. This application March 3, 1971, Ser. No. 120,508

Int. Cl. B65d *33/24*

U.S. Cl. 150—3 **10 Claims**



A thin plastic film bag having openable pressure releasable rib and groove elements and closure strips at the top for closing a top side opening with the first strip having a marginal portion extending downwardly and attached to the bag wall and the second strip having a marginal portion extending upwardly and attached to the bag wall, and the first strip having a flange extending upwardly attached to the marginal portion of the second strip and having a tear line for releasing the flange so that it can be used to pull open the bag by separating the rib and groove elements.

3,685,563

Patent Not Issued For This Number

3,685,564

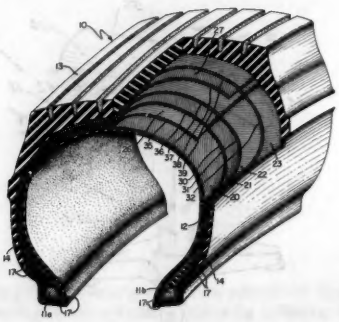
PNEUMATIC TIRE

John C. Smithkey, Jr., 1271 Overland Ave., North Canton, Ohio

Filed Nov. 17, 1969, Ser. No. 877,340

Int. Cl. B60c *9/08*

U.S. Cl. 152—356 **8 Claims**



A bias-ply pneumatic tire having breaker plies disposed beneath the tread and interleaved among the carcass plies and having special cord angle relationships among the several plies to provide a stiff tread area and flexible sidewall areas.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawings and the following detailed description.

3,685,565

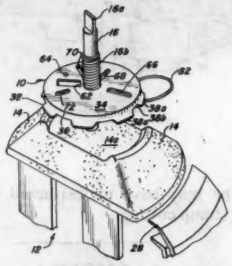
ADAPTER FOR TIRE CHANGING STAND

Billy L. Sorenson, and Elmer J. Strang, both of Fort Dodge, Iowa, assignors to The Coats Company, Inc.

Filed March 8, 1971, Ser. No. 121,961

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.24 **10 Claims**



A tire changing stand characterized by the provision of a peripheral configuration for accepting specific interior rim configurations and further the provision of a movable inner plate having bolt receiving holes keyed to a master positioning slot for receiving wheel rims of different numbers and sizes of bolt holes.

3,685,566

Patent Not Issued For This Number

3,685,567

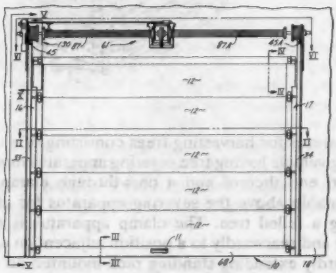
SECTIONAL FIRE DOOR ASSEMBLY

Paul E. Pemberton, 13327 Arawak, Dallas, Tex., and John J. Luby, 303 N. Merrill Ave., Duncanville, Tex.

Filed Sept. 18, 1969, Ser. No. 858,974

Int. Cl. E05f *15/20*

U.S. Cl. 160—8 **10 Claims**

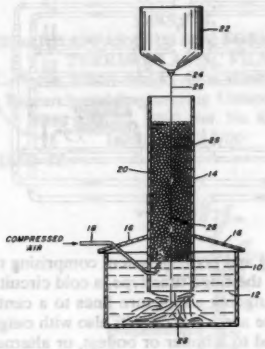


A door having horizontally hinged sections is supported upon reinforced track means for movement between an upright closed position and an open position. A counterbalance mechanism, which is mounted upon the wall above the opening, is connected to the door to counteract gravity. The counterbalance springs are connected to fusible link means which melts at a predetermined temperature and thereby reduces the tension on the springs so that the door will close under the force of gravity. Governor means is rendered operative when the fusible link is ruptured to control the closing movement of the door.

3,685,568
METHOD OF QUENCHING METAL FILAMENT IN FROTH

Robert B. Pond, Sr., Westminister, Md., assignor to United States Steel Corporation

Filed March 1, 1971, Ser. No. 119,752
Int. Cl. B22d 11/12
U.S. Cl. 164—89 3 Claims

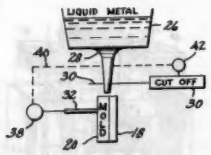


A process for directly producing metallic filaments and fibers from molten metal by extruding a stream of the molten metal into a froth quenchant. The froth serves to quickly solidify the molten metal stream without damaging inertial effects, thus making the process ideally suited for metals having a high latent heat of fusion and/or a high surface tension.

3,685,569
METHOD FOR GRAVITY PRESSURE PERMANENT MOLDING

Bryce A. Denton, Ontario, Calif., assignor to General Electric Company

Filed July 30, 1970, Ser. No. 59,473
Int. Cl. B22d 27/10
U.S. Cl. 164—120 2 Claims

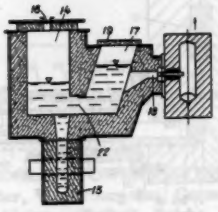


The invention is a method to reduce the porosity in gravity pressure permanent molding of metal objects. It involves gravity filling a mold cavity through an opening with a charge of liquid metal that has high solidification shrinkage characteristics. The metal is allowed to slush and then, after a predetermined time, a momentary pressure is applied to the slush by means of pistons operating into the mold while the fill opening is still mechanically unclosed causing the metal to fill voids caused by shrinking. The pistons are then removed preferably before opening the mold. Apparatus for timing the cutoff and piston movement is provided in a structure that is used for making flatiron soleplates.

3,685,570
MEANS FOR CASTING

Bengt Fredrikson, Kallgafrn 9B; Stein Larsen, Fornforskargaton 54, and Erkki Suvanto, Mjolnars vag 5, all of Vasteras, Sweden

Continuation-in-part of Ser. No. 875,162, Nov. 10, 1969, abandoned. This application June 17, 1971, Ser. No. 154,046
Claims priority, application Sweden, Nov. 14, 1968, 15431/68
Int. Cl. B22d 11/10, 27/02
U.S. Cl. 164—251 3 Claims

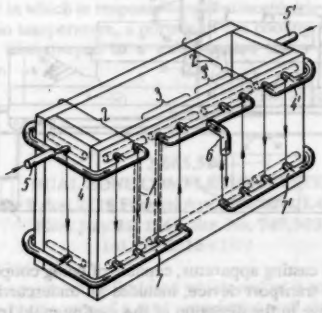


In continuous casting, such as dipforming wire, a furnace is used, which is divided into at least three spaces. A first part comprises an inlet part to be filled with melt from a melting furnace, a second part communicates with the lower portion of the first part and is provided with at least one gas inlet and is connected to at least one inductive heating unit of the channel-type induction furnace type, and a third part has an outlet nozzle or casting opening for feeding melt into a casting equipment, which third part communicates with the lower portion of the second part.

3,685,571
COOLING SYSTEM FOR CONTINUOUS CASTING MOLD

Vitaly Maximovich Niskovskikh; Viktor Fedorovich Dyshkant, and Leonid Georgievich Kuznetsov, all of Sverdlovsk, U.S.S.R., assignors to Uralsky Zavod Tyazhelogo Mashinostroenigimeni S., Ordzhonikidze, Sverdlousk, U.S.S.R.

Filed Feb. 16, 1970, Ser. No. 11,567
Int. Cl. B22d 11/12
U.S. Cl. 164—283 3 Claims



A mould of a metal continuous casting machine provided with a system for supplying and withdrawing a cooling fluid flowing along ducts disposed in the mould walls, the ducts being interconnected serially at least in pairs.

3,685,572
APPARATUS FOR DIE-CASTING METALS

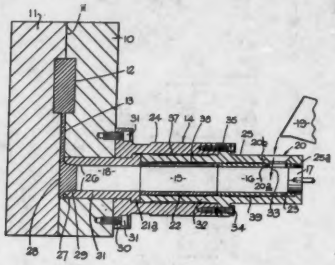
Bryan George Carver, Birmingham, and Ronald Crooks, Wolverhampton, both of England, assignors to G.K.N. Group Services Limited, Worcestershire, England

Filed Oct. 19, 1970, Ser. No. 81,801

Claims priority, application Great Britain, Oct. 25, 1969, 52,377/69

Int. Cl. B22d *17/04*

U.S. Cl. 164—312 5 Claims



Die-casting apparatus, primarily for casting ferrous metals, including a shot duct formed from two or more longitudinally successive structurally separate components which may be made of respective different materials or of the same material, in either case selected to suit the operating conditions to which they are exposed. The components are supported partly by one of the dies and partly by a casing such that the degree of tightness of interference between the casing and the components supported therein is selected to provide a controlled degree of radially outward conduction of heat thereby to control the operating environment of the components.

3,685,573
MOVABLE CASTING APPARATUS

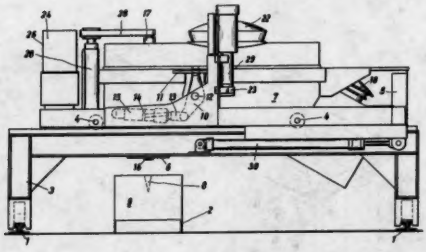
Hans Georg Domres, Dortmund-Oespel; Emil Simons, Braumbauer, and Horst Gillhaus, Dortmund-Loh, all of Germany, assignors to Brown, Boveri & Cie, AG, Mannheim, Germany

Filed Sept. 15, 1970, Ser. No. 72,362

Claims priority, application Germany, Sept. 26, 1969, G 69 37 640.5

Int. Cl. B22d *41/00*

U.S. Cl. 164—335 4 Claims



A movable casting apparatus, capable of being coupled to a casting mold transport device, includes an undercarriage arranged to move in the direction of the casting mold transport device and an upper carriage movably supported on the undercarriage for movement transverse to the direction of movement of the undercarriage. A closed induction channel furnace having a bottom tap and a removable cover is movably and tiltably mounted on the upper carriage and the means for moving, tilting and operating the furnace are incorporated on the upper carriage.

3,685,574
CENTRAL HEATING AND COOLING SYSTEM

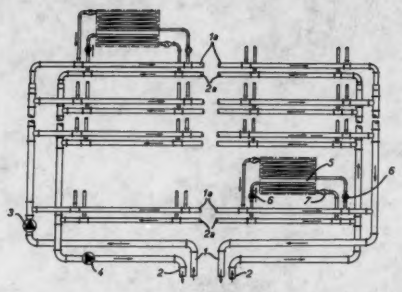
Philippe Worms, Commandente Zorita 4, Madrid 20, Spain

Filed Oct. 26, 1970, Ser. No. 83,888

Claims priority, application Spain, Nov. 5, 1969, 373 203

Int. Cl. F24f *3/00*

U.S. Cl. 165—22 5 Claims



A central heating and cooling system comprising two independent circuits of the singe-tube type, a cold circuit which is coupled with its outgoing and return lines to a central cold-production machine and a hot circuit, also with outgoing and return lines coupled to a boiler or boilers, or alternatively to an exchanger or exchangers. These circuits comprise as many branch conduit lines as there are levels or stages in which the utilization points are located, each utilization point comprising a water-air temperature-exchange unit having a single air circuit. Each branch line has a pump upstream of its exchanger and a nonreturn valve downstream of its exchanger, flow through the branch line being from a first point on the associated main conduit to a second point on the associated main conduit, the first point being downstream of the second point with respect to flow of the heat exchange fluid through the main conduit. In this way the flow of the fluid through the branch line is prevented when the associated pump is not in operation.

3,685,575
PREFABRICATED HEATING, VENTILATING AND AIR CONDITIONING UNIT

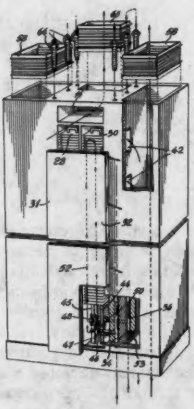
Maurice Henriot, 70, Avenue Paul Valery, 95 Sarcelles, France

Filed March 24, 1970, Ser. No. 22,238

Claims priority, application France, March 26, 1969, 6908818

Int. Cl. F25b *29/00*

U.S. Cl. 165—48 6 Claims



A heating, ventilating and air conditioning unit comprising separate hot air and cold air supply compartments adapted for

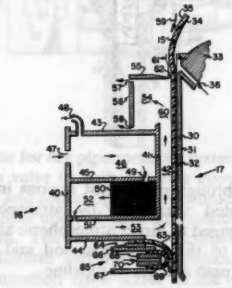
connection to separate air supplies, a foul air return compartment in communication with each room for withdrawing foul air from the room, and two open compartments housing respectively hot water and cold water fin-type radiators. Flat-tube radiators having hot and cold water sections are located in front of the open compartments. In addition, separate hot and cold water distribution systems are provided in the unit and connected to the flat-tube radiators and to the fin-type radiators for supplying water thereto.

3,685,576

PROCESS AND APPARATUS FOR FORMING TUBULAR THERMOPLASTIC FILM

Howard C. North, 526 St. Marks Ave., Westfield, N.J., assignor to Esso Research and Engineering Company

Filed Aug. 27, 1969, Ser. No. 853,381
Int. Cl. F24h *3/00*
U.S. Cl. 165—47 5 Claims



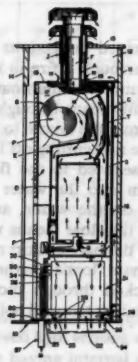
Cooling of extruded tubular film may be effected according to a novel technique wherein the film is counter-currently contacted with cooling liquid in a novel apparatus including a cooling cell having an annular passageway which permits passage of the film through e.g. a static zone, a quiescent zone, and a turbulent zone.

3,685,577

MOBILE HOME AIR HEATING AND COOLING SYSTEM

James C. Goodgion, and Armond L. Blossom, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Division of Ser. No. 15,642, March 2, 1970. This application July 30, 1971, Ser. No. 167,570
Int. Cl. F25b *29/00*
U.S. Cl. 165—48 13 Claims



A base assembly for a down-flow mobile home furnace and air cooling unit includes a platform support with a central opening located at the bottom of a compartment adapted to receive an air cooling coil. A connecting duct extends from the platform support to a distribution duct and provides a perimetric space therearound. A make-up air chute is positionable to extend downwardly from a selected side of the perimetric space, and the casing around the space provides openings for the make-up air to exit and flow upwardly around the sides of the casing as installed in an alcove or closet. Preferably, a floor plate is positioned to slidably receive the casing and it extends inwardly to provide the air chute mounting means on a plurality of sides thereof. The refrigerant tubes can extend through the perimetric space selectively along any side thereof. The make-up air chute is connected to the floor plate to facilitate routing of refrigerant tubes to the outside through the chute.

3,685,578

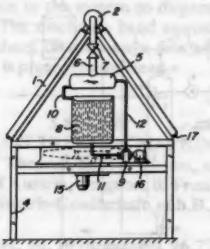
Patent Not Issued For This Number

3,685,579

COOLING TOWER SYSTEM

Kurt Spangemacher, Wasserburg Inn, Germany, assignor to Maschinenbau-Aktiengesellschaft Balcke, Bochum, Germany

Filed Aug. 10, 1970, Ser. No. 62,456
Claims priority, application Germany, Aug. 8, 1969, P 19 40 052.3
Int. Cl. F24h *3/06*
U.S. Cl. 165—122 9 Claims



A cooling tower system which comprises a dry cooling tower, according to which normally the medium to be cooled is passed through a dry cooling tower cooled by atmospheric air, and in which in response to said atmospheric air exceeding a certain temperature, a portion of the cooling medium to be cooled is conveyed to a water-cooled tower to be cooled thereby.

3,685,580

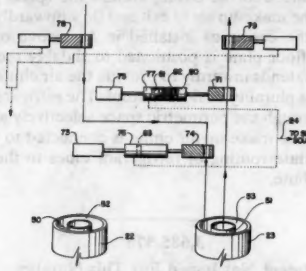
DUAL ZONE COMPLETION SYSTEM

Douwe De Vries, 2116 Frankel Ave., Matairie, La.

Filed July 26, 1968, Ser. No. 747,903
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 8 Claims

An arrangement is disclosed which makes it possible to (1) produce both zones of a dual completion well simultaneously or (2) permit either one of the two flowlines used in such production operation to be used as a service line for the other of said flowlines. In the disclosed arrangement, a tubing string is concentrically disposed within each of the production strings extending into the well. Valves selectively operable by means of a single control line are associated with the strings to alter the fluid flow path with respect to the strings and the

flowlines to permit through-the-flowline operations to be carried out separately with respect to each zone or, alternatively,



to allow production from both zones without commingling of the production fluid.

3,685,581

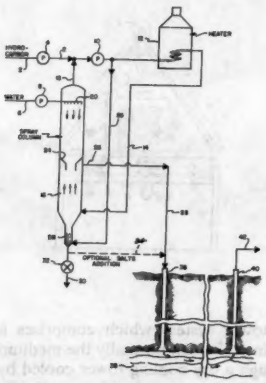
SECONDARY RECOVERY OF OIL

Howard V. Hess, Glenham, and Frank E. Guptill, Jr., Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed March 24, 1971, Ser. No. 127,702

Int. Cl. E21b *43/20, 43/24*

U.S. Cl. 166—272 **5 Claims**



Promoting secondary recovery of crude petroleum from a subsurface reservoir by flooding the reservoir with a continuous phase liquid admixture of hydrocarbon oil and water under high temperatures and pressures at which the oil dissolves water.

3,685,582

ELECTROLESS METAL PLATING TECHNIQUES FOR CONSOLIDATION OF INCOMPETENT FORMATIONS

Edwin A. Richardson, 3739 Carlon, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 849,178, Aug. 11, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,563

Int. Cl. C23c *3/02*; E02d *3/14*; E21b *33/138*

U.S. Cl. 166—292 **8 Claims**

A method of depositing metal, for example, in order to consolidate an incompetent subsurface earth formation, by an electroless metal plating process using hydrogen phosphite ion containing compound as the reducing agent in the metal plating solution.

3,685,583

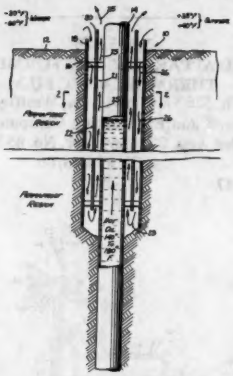
PERMAFROST INSULATION

Lindsey J. Phares, West New York, N.J., assignor to Raymond International, Inc., New York, N.Y.

Filed April 13, 1970, Ser. No. 27,818

Int. Cl. E21b *43/24*

U.S. Cl. 166—302 **3 Claims**



Oil pipelines through permafrost regions in the earth are thermally insulated therefrom by atmospheric air flow passageways arranged to direct atmospheric air down along a first path close to the permafrost soil and then back up between the first path and the oil pipeline.

3,685,584

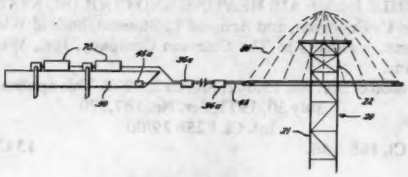
ARRANGEMENT FOR FORMING A WATER SHIELD TO EXTINGUISH FIRES IN WATER COVERED AREAS

Eberto Gracia, 10718 Sagedowne Lane, Houston, Tex.

Filed May 12, 1971, Ser. No. 142,478

Int. Cl. A62c *3/00*

U.S. Cl. 169—2 R **5 Claims**



Float means are formed in sections so that they may be secured together to surround a fire in a water covered area. Nozzle means are mounted on the float means and are communicated with conduit means through which water may be supplied and ejected from the nozzle to provide a water shield for enclosing the flame and cutting off its oxygen supply. Barrier skirt means are secured to the float means to depend downwardly therefrom into the water covered area to trap contaminant floating on the water, and additional conduit means are carried by the float means with an open end projecting on one side of the barrier skirt means for communication with the contaminant floating in the water so that the contaminant may be sucked through such conduit means and discharged into a container to avoid pollution.

3,685,585

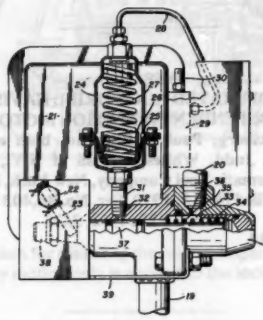
Patent Not Issued For This Number

3,685,586

ACCELERATOR FOR DRY PIPE SPRINKLER SYSTEMS

Arthur W. Zimmerman, Fairview Park, Ohio, assignor to A-T-O Inc., Willoughby, Ohio

Filed June 1, 1971, Ser. No. 148,571
Int. Cl. A62c 35/00
U.S. Cl. 169—17 6 Claims



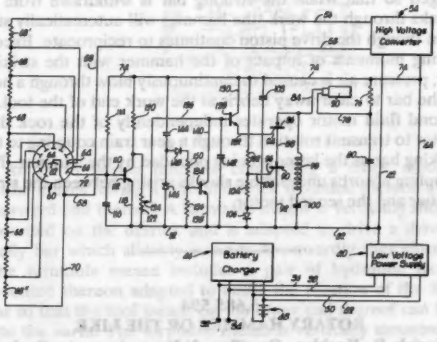
An accelerator for dry pipe sprinkler systems communicates with a dry pipe valve in such a system above and below the clapper thereof and acts to open a communicating passageway around said clapper upon a loss of air pressure in said dry pipe sprinkler system. The accelerator incorporates a pressure translator mechanism and a valve mechanism, both which prevent contamination from water in the sprinkler system from reaching the actuating parts of the accelerator.

3,685,587

LIGHT RESPONSIVE ACTIVATING APPARATUS FOR FIRE OR EXPLOSION SUPPRESSING SYSTEMS

Robert E. Pugh, and Donald E. Fritsche, both of Grain Valley, Mo., assignors to Fike Metal Products Corporation, Blue Springs, Mo.

Filed May 28, 1971, Ser. No. 147,968
Int. Cl. A62c 37/06
U.S. Cl. 169—19 12 Claims



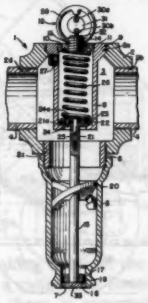
A deluge type fire and explosion suppressing system is provided employing improved light sensing means in the nature of a photomultiplier tube having internal amplification properties and improved control and actuating circuitry for the deluge material releasing mechanism which is substantially immune to the effects of electrical transients of either polarity.

3,685,588

DISCHARGE HEAD FOR A FIXED FIRE-EXTINGUISHING SYSTEM

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed July 2, 1971, Ser. No. 159,406
Int. Cl. A62c 37/08
U.S. Cl. 169—37 8 Claims



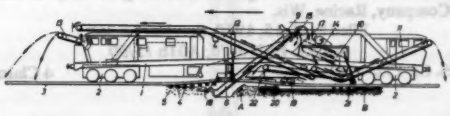
A discharge head for fixed fire extinguishing systems of the type in which a fluid extinguishant is supplied under line pressure to a plurality of such heads. The actuation of the head in response to afire is inhibited when line pressure drops below a predetermined magnitude, thereby preserving the ability of already actuated heads in the system to disperse extinguishant directly on a fire. The discharge head operates to release a stream of extinguishant directly on a fire when a predetermined line pressure is present in the head.

3,685,589

BALLAST TREATING MACHINE

Franz Plasser; Josef Theurer, both of Vienna, and Karl Folser, Linz-Urfahr, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industrie-Gesellschaft m.b.H., Vienna, Austria

Filed Dec. 10, 1970, Ser. No. 96,774
Claims priority, application Austria, Dec. 18, 1969, 11775
Int. Cl. E01b 27/00
U.S. Cl. 171—16 14 Claims



In a ballast treating apparatus, wherein ballast is removed from underneath a track section, cleaned on a screen which separates the removed ballast into clean ballast and rubble, and the clean ballast is returned to the ballast bed, two overlapping conveyor bands are arranged to receive the rubble from the screen and move it away in opposite directions.

3,685,590

Patent Not Issued For This Number

3,685,591

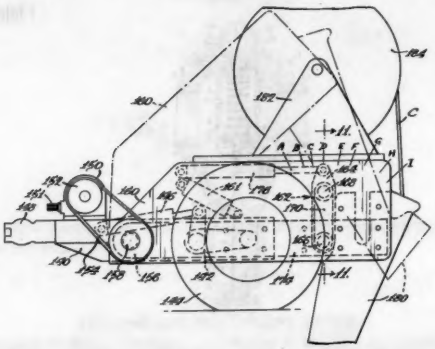
SLIT TRENCHING AND CABLE LAYING MACHINE WITH ORBITAL ACTION PLOW

Raymond M. Ulrich, and Solomon D. Ulrich, both of c/o Ulrich Foundation, Inc, Roanoke, Ill.

Continuation-in-part of Ser. No. 616,585, Feb. 16, 1967, abandoned. This application Oct. 24, 1969, Ser. No. 869,248

Int. Cl. F16l 1/00; E02f 5/02

U.S. Cl. 172—40 15 Claims



In a machine for cutting a slit trench, a plow member that projects downwardly into the ground is caused to move in an orbital cutting path by means of a rotary eccentric drive shaft that is connected with an above ground portion of the plow assembly at a first selected point of attachment and restraining means that is connected to the above ground portion of the plow assembly at a second selected point of attachment, the plow assembly being both supported and driven by said eccentric shaft and said restraining means, and being characterized in that the restraining means comprises a link extending transversely of the plow assembly at said second point of attachment. The link is pivotally mounted at one end of the machine frame and is pivotally connected at its other end to the plow assembly at said second point of attachment, thereby to limit the transverse movement of said second point, i.e., in the direction of the link, but without impairing the longitudinal movement of said second point, thereby compelling the lower end of the plow to move in an elliptical orbital path. As an alternative, producing essentially the same results, the link may be replaced by an oscillatory eccentric idler shaft.

3,685,592

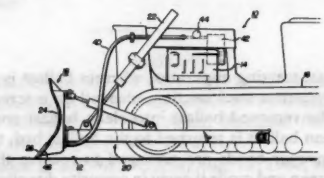
FLUID CUSHIONED DOZER BLADE

Claude M. Frisbee, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Sept. 15, 1970, Ser. No. 72,368

Int. Cl. E02f 3/76; A01b 15/00

U.S. Cl. 172—801 4 Claims



An earth moving blade assembly for a dozer or the like earth working machine has a cutting portion at the ground-engaging end of the blade and a moldboard portion closely spaced above the upper end of the cutting portion. A fluid chamber is provided at the rear of the blade assembly which is in communication with a source of fluid under pressure and this chamber is provided with a plurality of apertures or orifices extending toward the soil contacting surface of the blade assembly moldboard, which apertures are positioned such as to provide a continuous fluid film over the entire moldboard surface when the chamber is pressurized. The resultant fluid film prevents adhesion of the soil moved from the cutting portion to the moldboard portion of the blade assembly and considerably reduces friction resistance during the earth moving operation of the blade assembly.

3,685,593

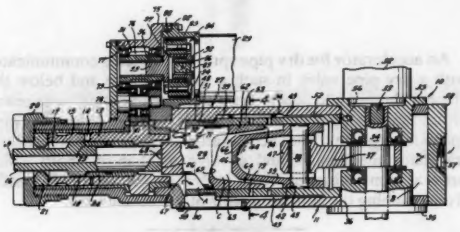
FLUID OPERATED ROCK DRILL HAVING AN INDEPENDENT ROTATION MOTOR

Lester A. Amtsberg; Paul J. Bilodeau, both of Utica, and Sebastian F. Judd, Whitesboro, all of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,403

Int. Cl. E21c 1/12, 3/26

U.S. Cl. 173—14 8 Claims



A rock drill having a pneumatically reciprocable piston hammer to pound a striking bar. Live air is caused to be applied continuously to one end of the hammer and alternately to the opposite end. A fluid motor is operable to reciprocate a drive piston relative to live air feed ports and to the hammer to cause development of differential pneumatic pressures alternately at opposite ends of the hammer to reciprocate the latter. Porting of live air to opposite ends of the hammer is arranged so that when the striking bar is withdrawn from or breaks through the work, the hammer will automatically stall even though the drive piston continues to reciprocate. Except during moments of impact of the hammer with the striking bar, pressure air is caused to continuously blow through a hole in the bar to clear away debris at the work end of the tool. A second fluid motor operates independently of the rock drill motor to transmit rotation through a gear train coupling to the striking bar as the latter is being pounded by the hammer. The coupling absorbs undesirable shocks arising between the striking bar and the second motor.

3,685,594

ROTARY HAMMER OR THE LIKE

Heinrich P. Koehler, Camillus, N.Y., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

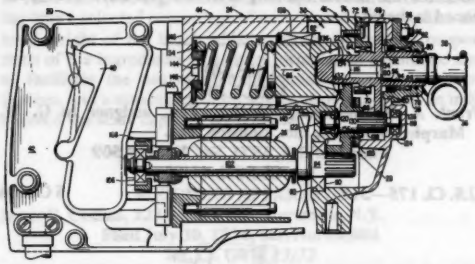
Filed Aug. 3, 1970, Ser. No. 60,545

Int. Cl. B25d 11/10; E21c 7/06

U.S. Cl. 173—48 12 Claims

A rotary hammer or the like including a holder for a tool, a power source, and a drive train through which rotary motion of the power source is transmitted to the tool holder. The

hammer also includes mechanism which is operable to impart periodic axial impacts to a tool in the holder, when desired,



and mechanism for disabling the impact imparting mechanism so that rotary motion only is applied to the tool.

3,685,595

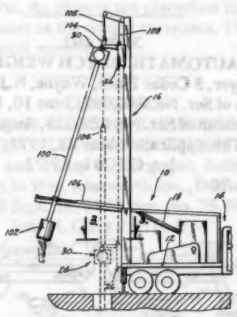
Patent Not Issued For This Number

3,685,596

METHOD AND MEANS FOR BORING EARTH

Robert A. Collins, 934 3rd Ave. S.W., Le Mars, Iowa

Filed Oct. 29, 1970, Ser. No. 85,098
Int. Cl. E21b *27/00*
U.S. Cl. 175—57 **6 Claims**



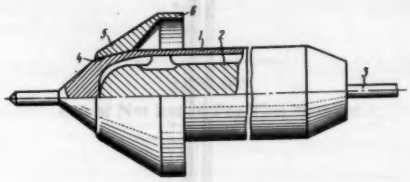
An earth boring machine comprising a truck mounted frame means having a pivotal derrick mounted thereon at the rearward end thereof. A turntable means is vertically slidably mounted on the derrick and is adapted to drive a drive or Kelly bar which slidably extends downwardly therethrough. The turntable means includes a pair of hydraulic motors mounted thereon adapted to cause the rotation of the Kelly bar so that the tool means on the lower end thereof can bore into the earth. The turntable means is vertically mounted on the derrick so that the turntable means can be moved upwardly thereon to clear the area beneath the derrick so that tools of various sizes can be accommodated. The Kelly bar and tool thereon can be pivotally moved outwardly with respect to the derrick to empty the tool without the necessity of pulling the tool upwardly through the turntable means as in conventional machines. The method of boring earth utilizing the above structure is also disclosed.

3,685,597

DEVICE FOR MAKING HOLES IN THE GROUND BY PACKING THE LATTER

Alexandr Dmitrievich Kostylev; Konstantin Stepanovich Gurkov; Nikolai Grigorievich Nazarov; Khaim Berkovich Tkach; Alexandr Ivanovich Demin, and Dmitry Ivanovich Vorobiev, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Sibirskogo Otdelenia AN, Novosibirsk, U.S.S.R.

Filed March 18, 1970, Ser. No. 20,660
Int. Cl. E21b *11/02*
U.S. Cl. 175—19 **3 Claims**



A device for making holes in the ground by packing the latter, comprising a cylindrical housing with a pointed front portion on which there is mounted a tapered reamer introduced into the ground under the effect of impact delivered by a reciprocating striker accommodated in the housing.

3,685,598

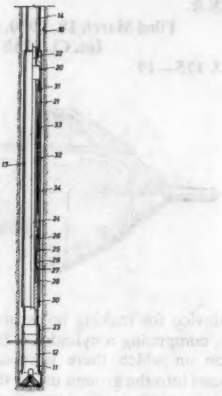
MECHANICAL JAR HAVING AN ADJUSTABLE TRIPPING LOAD

Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,285
Int. Cl. E21b *1/10*
U.S. Cl. 175—302 **8 Claims**

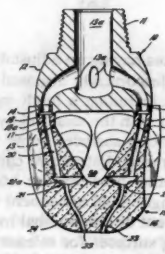
A well jar apparatus having an adjustable tripping force includes a mandrel telescopically disposed within a housing, a tripping mechanism including a latch means that is held in gripping engagement with the mandrel by locking surfaces on the housing, the locking surfaces being released by longitudinal movement, a resilient structure capable of longitudinal deflection and reacting between the housing and the latch means to oppose longitudinal movement with a force that is a function of the amount of longitudinal movement required to position the locking surfaces for release of the latch means, and selectively adjustable means for changing the amount that the resilient structure need be deflected before the locking surfaces are in such position, thereby to adjust the tripping force for the jar.

3,685,599
MECHANICAL JAR
James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Oct. 20, 1970, Ser. No. 82,284
Int. Cl. E21b *1/10*
U.S. Cl. 175—304 13 Claims



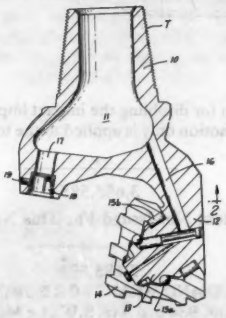
An illustrative embodiment in accordance with the present invention in jars includes a mandrel and housing which are telescopically disposed and adapted for connection in a pipe string, said mandrel and housing having spaced impact surfaces which can be brought together to deliver a jarring blow, an expansible sleeve member having threads meshed with threads on said mandrel, cam surfaces on said threads for expanding said sleeve member and releasing said threads from mesh with one another, means released by longitudinal relative movement between said housing and said sleeve member for locking said sleeve member in threaded engagement with said mandrel; and a resilient column structure coacting between said housing and said sleeve member for yieldably resisting longitudinal relative movement so that a force of a predetermined magnitude can be applied to said housing before said threads are permitted to release.

3,685,600
BIT GUIDE AND PROTECTOR INCORPORATING AN ARRANGEMENT FOR INITIALLY INSERTING OR REPLACING OF BIT JETS
Howard I. Lorenz, 518 Ripple Creek, Houston, Tex., and Eugene P. Rosser, 942 The Main Bldg., Houston, Tex.
Filed June 1, 1971, Ser. No. 148,499
Int. Cl. E21b *9/00*
U.S. Cl. 175—307 12 Claims



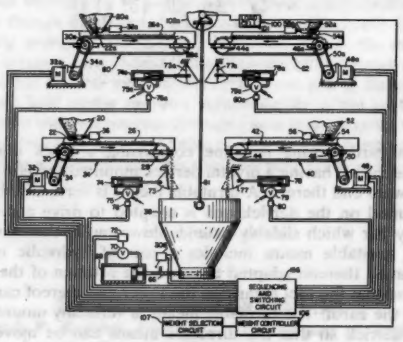
A guide and protector arrangement for a drill bit that has openings therein for receiving removable jets which includes jacket means for covering the bit cutting surfaces with access openings in the jacket means for insertion and removal of the bit jets. Fluid passage means are provided in the jacet means for communicating with the well bore at one end and the access openings at the other end, and a closure means is provided for the access opening after the jets have been positioned in the bit.

3,685,601
DRILL BIT
Frank A. Hollingshead, Houston, Tex., assignor to G. W. Murphy Industries, Inc., Houston, Tex.
Filed March 1, 1971, Ser. No. 119,509
Int. Cl. E21b *41/00*
U.S. Cl. 175—318 5 Claims



A rotary drill bit having a plurality of journal-mounted rotating cutters, jet passageways through which drilling fluid is discharged between the cutters and check valves disposed in the passageways to permit drilling fluid to flow therethrough to the cutters and to prevent flow in reverse direction therethrough into the interior of the bit.

3,685,602
AUTOMATIC BATCH WEIGHER
Gerald C. Mayer, 5 Cedar Place, Wayne, N.J.
Continuation of Ser. No. 840,097, June 10, 1969, abandoned, which is a division of Ser. No. 658,229, Aug. 3, 1967, Pat. No. 3,528,578. This application May 28, 1971, Ser. No. 148,227
Int. Cl. G01g *19/22*
U.S. Cl. 177—70 19 Claims



The batch weighing system disclosed herein for successively weighing out pre-selected ingredients in a batch formula has a modularized weight controller circuit in which pre-set voltages control the weights of ingredients or materials making up the batch and in which a skeleton network is selectively built up by using logic card modules to provide selected combina-

tions of the following functions: automatic, compensated cutoff of each ingredient delivered to the scale hopper, delivery of each ingredient to the scale hopper at a full flow feed rate and a dribble feed rate, overweight and underweight checking of each delivered ingredient, partial batch control for delivering only a selected percentage of each ingredient to reduce the total weight of the batch while retaining the proper proportions of the ingredients in a given formula, an automatic tare to facilitate the use of non-accumulative weight selection devices, and a maximum batch size control to provide an indication if the scale capacity is exceeded.

3,685,603

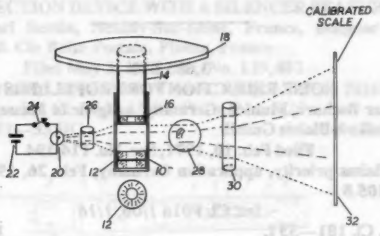
WEIGHING APPARATUS

Jorge G. Codina, 223 Secor Road, Hartsdale, N.Y.

Filed July 30, 1970, Ser. No. 59,606

Int. Cl. G01g *23/32*

U.S. Cl. 177—178 **1 Claim**



Apparatus for weighing objects comprising first and second vertical elongated members disposed one above the other. The upper member carries a weighing platform. The upper member is movable toward and away from the lower member. First and second magnet means secured respectively to the upper and lower members are vertically separated by forces of magnetic repulsion. As objects are placed on the platform, the separation decreases as the weight increases. The separation is measured to indicate weight.

3,685,604

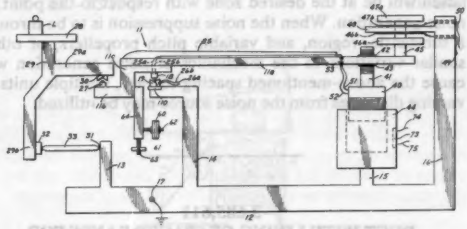
BALANCED MASS-MOMENT BALANCE BEAM WITH ELECTRICALLY CONDUCTIVE PIVOTS

James E. Smith, and Victor F. Borgogno, both of Longmont, Colo., assignors to Wm. Ainsworth Inc., Denver, Colo.

Filed Sept. 28, 1970, Ser. No. 75,987

Int. Cl. G01g *21/10, 3/14*

U.S. Cl. 177—184 **15 Claims**



A pivotally mounted balance beam is constructed and arranged to nullify its pendular characteristics by appropriately distributing and balancing the moments of the mass both parallel and perpendicular to the beam plane so that whenever the beam reference plane is tilted out of the horizontal any weighing errors resulting from tilt and vibration of the frame of the weigh balance apparatus are minimized. In forming a part of the weigh balance apparatus, a circuit generates an output proportional to load as a function of beam deflection sensed by capacitive sensors and operates through an electromagnetic restoring device including a beam mounted forcer coil to restore the beam to its null position. The coil is connected through electrically conductive knife edges and bearing flats to receive the circuit output and has its position relative to the magnet of the restoring device set so that the restoring device has a linear response to the circuit output. A display receives the circuit output and is compensated for errors caused by changes in the response of the restoring device as a function of its operating temperature to provide a readout representing load.

3,685,605

Patent Not Issued For This Number

3,685,606

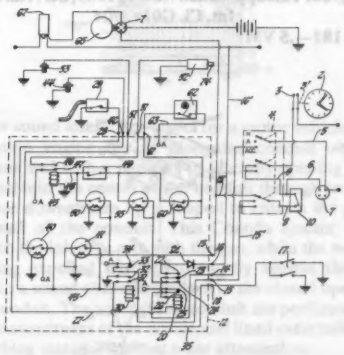
TIMER-OPERATED CAR STARTER

Robert H. Blow, Jr., Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1970, Ser. No. 67,082

Int. Cl. F02n *1/06*

U.S. Cl. 180—114 **6 Claims**



A timer operated motor vehicle starter for starting a motor vehicle at a predetermined set time which system guards against theft by automatically closing down if the car doors are opened or if the gearshift lever is placed in a gear or drive position. A main feature of the starting system is that the vehicle throttle is automatically "pumped" if the engine fails to start after a predetermined number of seconds and if the engine still fails to start, the system closes down.

3,685,607

AIR SUPPORT VEHICLE

Jan A. Eglen, Terre Haute, Ind., assignor to Eglen Hovercraft, Inc.

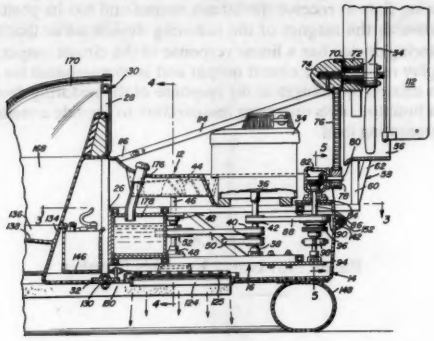
Filed March 26, 1970, Ser. No. 22,848

Int. Cl. B60v *1/14, 1/18*

U.S. Cl. 180—117 **12 Claims**

A vehicle constructed for operation on the air cushion principle and including an internal tubular frame mounting all of the operational components of the vehicle. The vehicle body

is molded into sections separate from the independently constructed frame. The assembled vehicle includes a single power



source for the lift and pusher fans or propellers and the skirt is in the nature of an inflated tube.

3,685,608

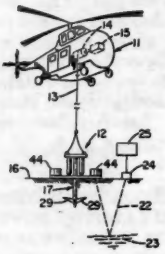
METHOD AND APPARATUS FOR AIRBORNE SEISMIC EXPLORATION

Ferris F. Hamilton, 320 High St., Denver, Colo.

Division of Ser. No. 738,572, June 20, 1968, Pat. No. 3,509,960. This application Nov. 3, 1969, Ser. No. 871,167

Int. Cl. G01v *1/04*

U.S. Cl. 181—.5 VM **8 Claims**



In apparatus for seismic operation, a seismic energy source is constructed and arranged to be supported in a depending manner from a cable carried by a helicopter and is gradually lowered to rest on the earth's surface at each selected location while the helicopter hovers above. Means are provided for positively anchoring the seismic energy source to the earth's surface in order to impart a seismic input into the earth and is activated by remote control from the helicopter.

3,685,609

LOUDSPEAKER

Nico Valentinus Franssen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

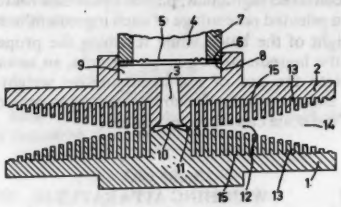
Filed Sept. 3, 1970, Ser. No. 69,269

Claims priority, application Netherlands, Sept. 18, 1969, 6914204

Int. Cl. G10k *13/00, 11/10*

U.S. Cl. 181—31 R **8 Claims**

A loudspeaker, formed by two dish-shaped parts provided with concentric grooves and arranged opposite one another with a vibrating system at the center. The sound channel is annular and of tapered section. The greatest geometric dimen-



sion of the channel is smaller than the corresponding acoustic length.

3,685,610

NOISE REDUCTION FOR PROPELLERS

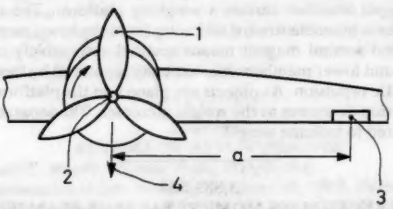
Oskar Bschorr, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH

Filed Feb. 10, 1971, Ser. No. 114,194

Claims priority, application Germany, Feb. 26, 1970, P 20 09 105.8

Int. Cl. F01n *1/06, 1/18*

U.S. Cl. 181—33 L **14 Claims**



Method and device for reducing noise produced by propellers. Anti-sound generators (devices reproducing sound vibrations but of inverted phase) are placed in the region of the noise generation but at a spacing therefrom determined by a mathematical relationship such that the zone of noise cancellation will be at the desired zone with respect to the point of noise generation. When the noise suppression is to be through a substantial region, and variable pitch propellers, or other similar variations in the mechanics of noise generation will cause the above-mentioned spacing to vary, multiple units at varying distances from the noise source may be utilized.

3,685,611

DUCT WITH LINING OF SPACED BANDS FOR SUPPRESSING SOUND IN A GAS STEAM TRANSMITTED THERETHROUGH

Tirumalesa Duvvuri, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

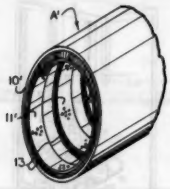
Filed March 24, 1971, Ser. No. 127,511

Int. Cl. B64d *33/06;* F01n *1/08;* F02k *1/26*

U.S. Cl. 181—33 H **2 Claims**

For suppressing sound transmitted through gases traveling at high velocity through a duct, such as the air inlet or exhaust

duct of an aircraft jet engine, the duct is lined with a plurality of bands extending traversely around the interior of the duct



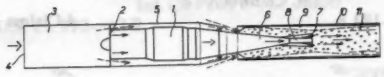
wall, the bands being spaced inwardly from the duct wall and axially of the duct from each other.

3,685,612

GAS EJECTION DEVICE WITH A SILENCER FEATURE

Jean Henri Bertin, Neuilly-Sur-Seine, France, assignor to Bertin & Cie Boite Postale, Plaisiz, France

Filed May 3, 1971, Ser. No. 139,402
Claims priority, application France, May 4, 1970, 7016227
Int. Cl. B64d 33/06; F01n 1/14, 7/20
U.S. Cl. 181—33 HC 9 Claims



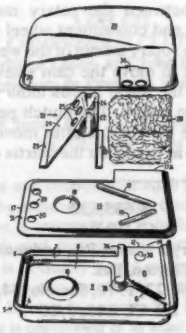
An ejection system comprises a flat fishtail nozzle opening into a flat fairing open at both ends to form therewith a static pump or ejector. The nozzle is subdivided into a succession of elementary nozzles producing a laminar jet of hot gases, and the fairing is likewise subdivided into as many separate juxtaposed elementary ducts as there are elementary nozzles. Each such elementary nozzle is associated with a respective elementary duct to form therewith an elementary static pump.

3,685,613

MUFFLERS FOR INTERNAL COMBUSTION ENGINES

Kenneth William Snodgrass; William Henry Steele; Alan Wilson, and Ross Leslie Phelps, all of Milperra, New South Wales, Australia, assignors to Victa Limited, Milperra, New South Wales, Australia

Filed May 11, 1971, Ser. No. 142,249
Claims priority, application Australia, May 12, 1970, PA 1183
Int. Cl. F01n 1/10, 7/18
U.S. Cl. 181—33 K 7 Claims



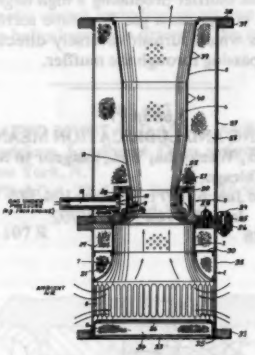
An exhaust muffler of compact form for use on small two-stroke internal combustion engines, and comprising a housing having an inlet and an outlet for exhaust gases and defining an indirect passage therethrough between the inlet and outlet for the exhaust gases. A wad of sound absorbing material is positioned in a part of the housing not traversed by the exhaust gases and receives the shock wave component of the exhaust gases by reflection from a plate located opposite the inlet.

3,685,614

METHOD AND DEVICE FOR ATTENUATING THE NOISE GENERATED BY THE EXPANSION OF GASES INTO THE ATMOSPHERE

Henri Coanda, and Constantin Teodorescu, both of Bucharest, Romania, assignors to Institutual Pentru Creatre Stiintifica si Technica, Bucharest, Romania

Filed Oct. 22, 1971, Ser. No. 191,922
Claims priority, application Romania, Oct. 26, 1970, 64778
Int. Cl. F01n 1/10, 1/14, 1/00
U.S. Cl. 181—33 E 10 Claims



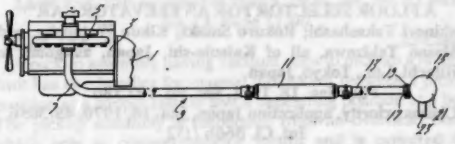
A noise or sound attenuator useful for a motor vehicle internal-combustion engine has an elongated conduit which is formed at one end with a plurality of laterally opening inlets. The gas is fed into the center of the conduit through an annular slot whose downstream lip is shaped to entrain the gas jet along the wall of the conduit. This Coanda ejector action sucks air into the inlets to mix with the gas, while the noise of the gas being expelled is directed mostly against the flow direction into a sound absorber located in the closed upstream end of the conduit. The walls of the conduit are perforated upstream and downstream of the nozzle and lined externally with sound absorbing material for best noise attenuation.

3,685,615

EXHAUST DIFFUSER

Paul A. Rutt, Jackson, Mich., assignor to Tenneco Inc., Houston, Tex.

Filed April 6, 1970, Ser. No. 25,833
Int. Cl. F01n 1/00, 7/00
U.S. Cl. 181—35 R 3 Claims



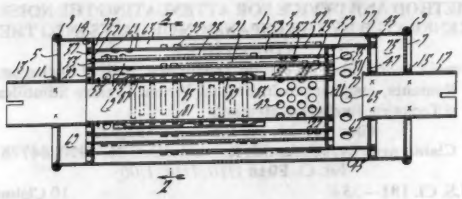
An exhaust gas diffuser and acoustic element has an elongated tubular shape and is arranged horizontally and transversely to the length of a motor vehicle while secured at the outlet end of the exhaust system to act as an acoustic component and a substitute for a tailpipe spout

3,685,616

FIVE PASS MUFFLER

Wladyslaw F. Malkiewicz, Casa Grande, Ariz., assignor to Tenneco Inc., Racine, Wis.

Filed Aug. 26, 1970, Ser. No. 67,061
Int. Cl. F01n 1/08, 7/18
U.S. Cl. 181—54 9 Claims



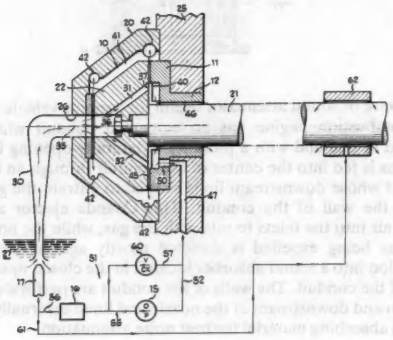
A short five pass muffler producing a high degree of broad band attenuation comprises a gas flow tube surrounded by a plurality of shells which furnish reversely directed gas flow paths for the gas passing through the muffler.

3,685,617

BEARING AND LUBRICATION MEANS

Willis W. Gardner, Waukesha, Wis., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 6, 1971, Ser. No. 104,373
Int. Cl. F16n 7/36, 29/02
U.S. Cl. 184—6.28 9 Claims



A bearing lubrication system used to lubricate and cool the thrust and journal bearings of a shaft of a rotating machine, such as, for example, a centrifugal compressor. The system incorporates a shaft mounted centrifugal pump discharging lubricating fluid directly into a chamber sealed by a thrust and a journal bearing.

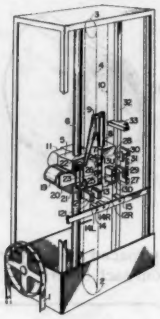
3,685,618

A FLOOR SELECTOR FOR AN ELEVATOR CAR

Yoshinori Takashashi; Rokuro Sasaki; Kikuo Watanabe, and Masao Takizawa, all of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 18, 1971, Ser. No. 107,180
Claims priority, application Japan, Jan. 16, 1970, 45/3856
Int. Cl. B66b 1/52
U.S. Cl. 187—29 R 10 Claims

A floor selector comprising a tracing means moved with the elevator movement, but on a reduced scale, and a preceding means driven ahead of the tracing means simultaneously with start of the elevator cage at a higher speed than the tracing means; wherein molded oscillators are installed on the tracing means, molded receivers are provided on the preceding means, and the outputs of the receiver are combined logically whereby various signals for controlling the elevator operation are obtained.

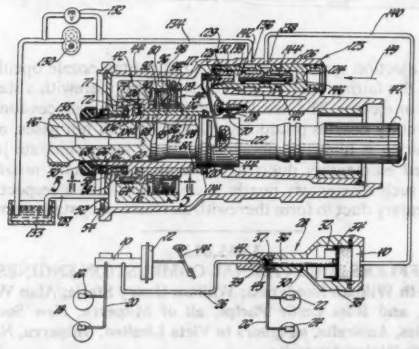


3,685,619

FULLY COMPENSATED BRAKE ANTI-LOCK SENSOR

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed March 8, 1971, Ser. No. 121,720
Int. Cl. B60t 8/12
U.S. Cl. 188—181 A 4 Claims



A vehicle brake anti-lock sensor having a wheel speed driven rotary member, an inertia weight, a cam sleeve connected to the rotary member by a roller and ramp cam arrangement and to the inertia weight by a clutch having a torque capacity proportional to the linear deceleration of the inertia weight, and a modulator actuating means responsive to relative movement between the rotary member and cam sleeve. Upon braking and consequent wheel speed reduction, the torque induced by rotary inertia of the weight acts through the cam arrangement to move the cam sleeve relative to the rotary member while the linear inertia induced force opposes movement of the cam sleeve. The clutch permits the inertia weight to overrun the cam sleeve after movement relative to the rotary member so as to sustain the inertia of the weight.

3,685,620

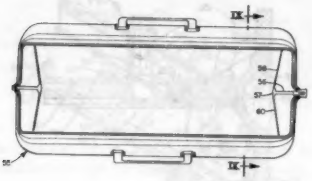
CLUB BAG

Marvin Schneider, Bryn Mawr, Pa., assignor to Rapid-American Corporation, Clayton, Del.

Filed Sept. 23, 1970, Ser. No. 74,557
Int. Cl. A45c 3/00
U.S. Cl. 190—48 7 Claims

A club bag is provided having pre-formed end configurations, that are adapted to facilitate an inward bending of end

portions of the bag, upon closing the same, with innermost end portions being optionally adapted to engage and maintain



positioning of an article contained within the club bag, and with the bag being convertible for use as a bowling ball bag.

3,685,621

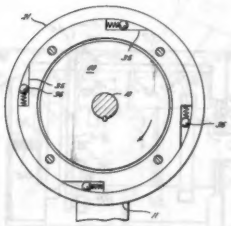
UNIDIRECTIONAL DAMPENER

Ronald A. Gulick, Sugarland, and Robert M. McEver, Jr., Houston, both of Tex., assignors to Research Engineering Company, Houston, Tex.

Continuation-in-part of Ser. No. 70,717, Sept. 9, 1970. This application May 7, 1971, Ser. No. 141,216

Int. Cl. F16d *67/02, 35/00*

U.S. Cl. 192—12 B **1 Claim**



A device for controlling unsteady motion of an actuator, wherein motion in one direction is relatively unrestrained, while motion in another is restrained. A movable member is positioned within a fluid-containing chamber. The chamber itself may move in the one direction but not in the other, whereon, motion of the movable member is opposed by the fluid.

3,685,622

COMPRESSOR CLUTCH

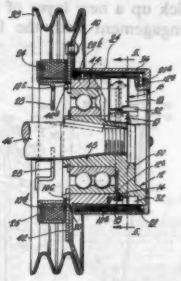
John S. Baer, Medford Lakes, and John H. Weatherby, Sewell, both of N.J., assignors to Precision Specialties, Inc., Pitman, N.J.

Filed June 15, 1970, Ser. No. 46,108

Int. Cl. F16d *13/04*

U.S. Cl. 192—35 **8 Claims**

Rotatable input and output hubs each have opposed friction faces separated by a bearing means through which at least a substantial torque is transmitted. A helical spring is attached to the output hub and surrounds a portion of the input and output hubs, but is normally out of engagement with the input hub. A pressure ring also surrounds portions of the input and output hubs and in turn is surrounded by the helical spring. The pressure ring is composed of at least three segments, each having a pair of beveled faces directed toward one another and opposing oppositely beveled faces on the input and output hubs, respectively. The free end of helical clutch spring is preferably magnetically selectively drawn into contact with the driven input hub by an energizing magnetic field which in turn causes the spring to wrap down and exert radially inward



pressure on the pressure ring. The input hub includes a portion of a magnetic circuit including an air gap into which the last turn of the helical spring is drawn as the magnetic field is energized.

3,685,623

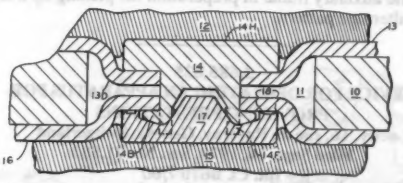
ENCAPSULATED RIVET AND ANVIL ARRANGEMENT

Clayton H. Bradshaw, Lyndhurst, Ohio, assignor to Abex Corporation, New York, N.Y.

Filed Oct. 29, 1970, Ser. No. 84,968

Int. Cl. F16d *13/60*

U.S. Cl. 192—107 R **7 Claims**



For a high energy brake or clutch of the type having at least one carrier plate with apertures, friction assemblies each comprise a solid-metal cup or backing with relatively frangible friction material held thereby. Half the assemblies are characterized by each having a male rivet substantially encapsulated within the friction material. The other half is characterized by each assembly having an anvil substantially encapsulated within its friction material. During field assembly, the rivet is upset by the anvil. There is thus avoided usual rivet-access "-holes," that is, usual absence of friction material, at "facing" sides of the assemblies.

3,685,624

DEVICE TO PACK ARTICLES IN BOXES

Paul F. Paddock, 4051 Watkins Drive, Riverside, Calif.

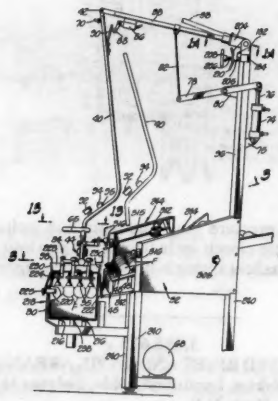
Division of Ser. No. 784,820, Dec. 18, 1968, Pat. No. 3,609,938. This application June 5, 1970, Ser. No. 57,403

Int. Cl. B65g *11/00*

U.S. Cl. 193—7 **23 Claims**

A pickup assembly having vacuum cups to pick up a layer of fruit has two handles for manual movement between a pickup position at a supply station and a depositing position at a box. The pickup assembly is suspended from an overhead boom which acts as counter-balance means and is powered for boosting action at certain points in the operating cycle. Since proper nesting of fruit in a box requires layers of alternate patterns, the pickup assembly comprises a main pickup head with multiple rows of vacuum cups, a first single row auxiliary head cooperative with the main head to pick up a layer of one of the alternate patterns and a second single row auxiliary head for

cooperation with the main head to pick up the other pattern, the two auxiliary heads being mounted on an auxiliary frame that is manually operable to move the two auxiliary heads to their cooperative positions alternately. With the pickup assembly poised to pick up a new layer of fruit, it is boosted downwardly into engagement with the fruit. If all of the



vacuum cups engage fruit, means responsive to the consequent drop in air pressure boosts the pickup assembly upwardly to initiate movement towards the box. As the empty pickup assembly is lifted from the box, the operator manually shifts the auxiliary frame in preparation for picking up a layer of the alternate pattern.

3,685,625

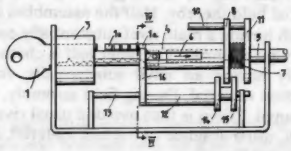
DEVICE FOR OPERATING AN APPARATUS FOR PROVIDING PRESTATIONS

Gene Loewy, 16, rue du Raveray, Geneva, Switzerland

Filed Sept. 14, 1970, Ser. No. 71,803

Int. Cl. B67b *7/00*

U.S. Cl. 194—4 **3 Claims**



A key having a plurality of frangible protusions for operation of the lock of an apparatus of the type which requires the use of an unlocking implement. The apparatus lock has an anvil for abutment with a selective protusion as the key is rotated within the lock. The anvil operates to break off one protrusion after each use of the key such that upon a predetermined number of uses of the key corresponding to the number of protrusions, the key no longer will operate the lock.

3,685,626

CONVERTIBLE TOKEN-ACTUATED CONTROL SYSTEM

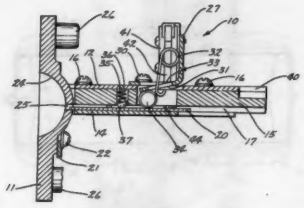
Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 6, 1971, Ser. No. 205,183

Int. Cl. G07f *1/06*

U.S. Cl. 194—4 C **11 Claims**

A token-actuated control circuit, operable for verifying authenticity of a token and initiating energization of a controlled machine, is convertible between two modes of operation to selectively effect energization of the machine with in-



validation of the token as a prerequisite or to effect energization without invalidation of the token.

3,685,627

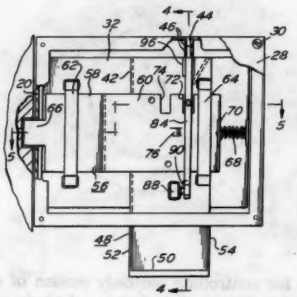
COIN-OPERATED SAFETY LATCH FOR PHONE BOOTHS AND THE LIKE

William Davis, 1859 Nolan St., Philadelphia, Pa., and Moses Stevenson, 1414 N. 30th St., Philadelphia, Pa.

Filed Oct. 7, 1970, Ser. No. 78,782

Int. Cl. G07f *5/00*

U.S. Cl. 194—32 **3 Claims**



A lock for a door, such as the door of a telephone booth, which requires the insertion of a coin to release the lock. When the lock is released to open the door, the coin is returned. The lock can be retained in its released condition until it is desired to return the lock to its locked condition to relock the door.

3,685,628

Patent Not Issued For This Number

3,685,629

PRINT HEAD CARRIAGE MECHANISM FOR IMPACTLESS PRINTER

John G. Rott, Orlando, Fla., assignor to Scope Incorporated, Reston, Va.

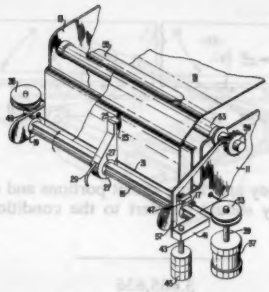
Filed Sept. 21, 1970, Ser. No. 73,792

Int. Cl. B41j *19/70*

U.S. Cl. 197—66 **3 Claims**

A carriage assembly for an impactless printer having a printing head mounted for reciprocal movement across the paper to be printed. A cable is attached at either end and passes

around a drive pulley at one side of the printer and an idler pulley at the other side. A bi-directional motor drives the pulley. A solenoid rotates the mounting means for the head so as to move the stylii into and out of contact with the paper.

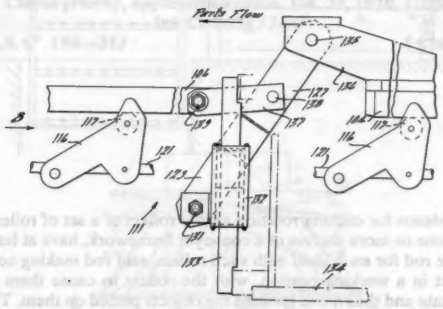


3,685,630

TRANSFER DEVICE

Fritz Pfrommer, Neckarhausen, Germany, and Bansal Suresh, Warren, Mich., assignors to The Cross Company, Fraser, Mich.

Filed April 26, 1971, Ser. No. 137,136
Int. Cl. B65g 37/00
U.S. Cl. 198—19 8 Claims



A device for transferring workpieces sequentially along groups of work stations, successive groups having different index spacing. One or more transfer bars extend through each group, the transfer bars of one group being reciprocated by a fluid motor with a fixed stroke. The motion is transmitted to the transfer bars of other groups in tandem with the first by mechanisms which compensate for the differences in index distance between the stations of successive groups. The transfer drive compensating mechanism between each group of stations comprises an arm pivoted at its inner end to a vertically slidable support and at its outer end to the transfer bar having the greater movement of the two successive bars. An intermediate portion of the arm is connected by links to the other set of transfer bars.

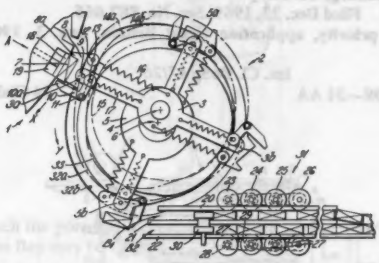
3,685,631

PACKING OR WRAPPING MACHINES OF THE MOULD WHEEL TYPE

Richard William Harris, London, England, assignor to Molins Machine Company Limited, London, England

Filed Aug. 18, 1970, Ser. No. 64,688
Claims priority, application Great Britain, Aug. 25, 1969, 42,192/69
Int. Cl. B65g 47/26
U.S. Cl. 198—31 AA 9 Claims

A mechanism for taking each cigarette packet from a packing machine and depositing alternate ones in upper and lower rows so that the two rows may be boxed together. The apparatus comprises two similar arms rotatable about different axes and carrying packet-gripping means which go through paths having a common point to receive the packets and two different output points are above the other to produce the two rows.

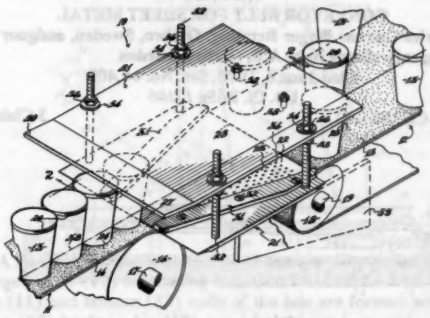


3,685,632

PNEUMATIC ARTICLE SPREADER

Dale J. Brady, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Aug. 27, 1970, Ser. No. 67,308
Int. Cl. B65g 47/26, 47/00
U.S. Cl. 198—31 7 Claims



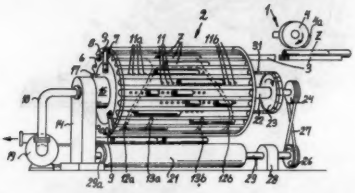
A pneumatic spreader which arranges a series of similar articles such as glass containers moving in single line arrangement into two or more ongoing lines. In preferred form, the spreader includes an air table having a multiplicity of air outlet ports in it and side guide rails that define a transfer area on the air table. The air ports are positioned in at least a left-hand apron and a right-hand apron, the outlets in the respective aprons being directed generally downstream but angularly away from those of the other apron. As the articles pass over the air table they float on a continuous air cushion and are distributed by angulated air jets issuing from the ports into the plural ongoing lines. Almost negligible article-to-article contact occurs.

A plate-like cover is positioned over the transfer area closely above the tops of the articles so as to prevent them from tipping or falling over as they are transferred from and to the conveyors and move on the air cushion. One or more pegs block flow of articles past them and assist in the formation of defined lines.

3,685,633
METHOD AND APPARATUS FOR MANIPULATING CIGARETTES OR THE LIKE

Willy Rudszinat, Dassendorf, and Harry David, Hamburg, both of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Dec. 23, 1969, Ser. No. 887,665
Claims priority, application Great Britain, Jan. 3, 1969, 491/69
Int. Cl. B65g 47/26
U.S. Cl. 198—31 AA 24 Claims

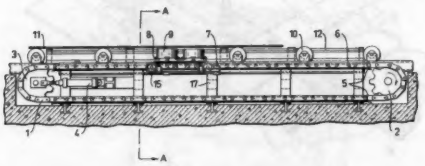


A single file of cigarettes issuing from a cigarette making machine is converted into one or more rows of transversely aligned cigarettes which move sideways by propelling the cigarettes into successive axially parallèl peripheral flutes of a revolving cylinder and by moving the cigarettes axially by suction during sidewise movement with the cylinder. The cigarettes are braked by suction on entry into the respective flutes and either continue to move in the direction in which they enter the flutes or are brought to a full stop prior to reversing the direction of lengthwise movement toward final axial positions.

3,685,634
CONVEYOR BELT FOR SHEET METAL

Charles Gunnar Birger Bergling, Orebro, Sweden, assignor to Ingenjorsfirma Hebe A,B, Orebro, Sweden

Filed June 8, 1970, Ser. No. 44,409
Int. Cl. B65g 17/46
U.S. Cl. 198—41 3 Claims



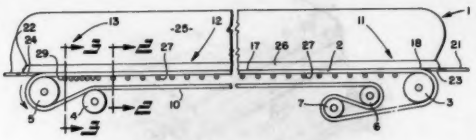
A conveyor system for sheet metal comprises a roller conveyor, a chain conveyor and electromagnetic means attached to the chain conveyor for aiding in transport of the sheet metal. The electromagnetic means is shiftable from one position in which it is inoperable to a different position in which it is operable.

3,685,635
PASSENGER CONVEYOR WARNING APPARATUS

Ernest D. Johnson, 486 Narragansett Drive, Talmadge, Ohio

Filed April 28, 1970, Ser. No. 32,703
Int. Cl. B66b 9/12
U.S. Cl. 198—16 3 Claims

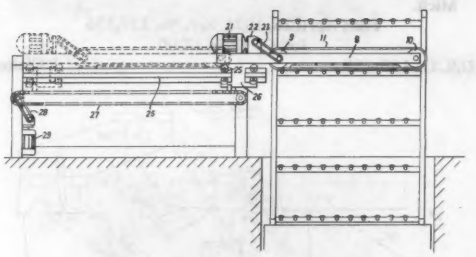
A moving walkway having one type of support throughout the major extent of the walkway and a different type of support producing a different riding sensation in those areas where the attention of the passengers is desired. Special disposition of supporting rollers for passenger carrying belts or a special track configuration for pallet type walkways produce changes in walkway movement which can be felt by the passengers and cause them to direct their attention to the walkway on which they are riding at exit portions and other positions where they should be alert to the conditions around them.



3,685,636
CONVEYOR ROLLERS

Enrico Putin, 2, Via P. Trevisan, Vicenza, Italy

Filed June 22, 1970, Ser. No. 48,257
Int. Cl. B65g 13/02
U.S. Cl. 198—127 1 Claim



Means for causing rotation of idle rollers of a set of rollers, of one or more shelves of a conveyor framework, have at least one rod for each shelf with such rollers, said rod making contact in a working postion, with the rollers to cause them to rotate and thus move forward the objects placed on them. The contact may be made by friction of a layer of soft material, or by engagement of teeth with toothed pinions, or by belt means, and those idle rollers which are not to be rotated may be braked by braking means controlled by said rods.

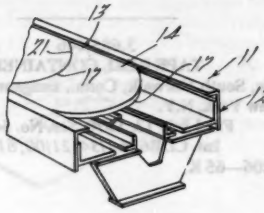
3,685,637
PALLET

Jorgen S. Bildsoe, Royal Oak, Mich., assignor to Seatech Engineering, Inc.

Filed July 17, 1970, Ser. No. 55,918
Int. Cl. B65g 17/00
U.S. Cl. 198—189 7 Claims

An improved conveyor assembly for conveying pallets along an irregular path. The pallets are of a two-piece design and a resilient covering material provides a protective load support-

ing surface for the pallets and hingedly connects the pallet sections together. The pallet sections are formed of such a configuration that they may be formed from a single, rectangular sheet of material.

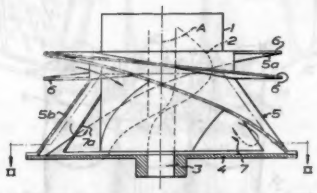


3,685,638

DEVICES FOR GUIDING MATERIAL TO THE ENTRANCE END OF A SCREW CONVEYOR HAVING A ROTATABLE SCREW AND A CONDUIT THEREFOR

Olle Lennart Siwersson, Gartnergatan 4,, 252 51 Helsinborg, and Karl Gunnar Tell, Malmogatan 3a, 252 49 Helsingborg, both of Sweden

Filed Jan. 29, 1971, Ser. No. 110,997
Claims priority, application Sweden, Jan. 29, 1970, 1107/70
Int. Cl. B65g *33/00*
U.S. Cl. 198—213 4 Claims



A device for guiding material to the entrance end of a conveyor comprising a screw which is rotatable about its longitudinal axis, and a stationary conduit therefor, consists of guide means rotatable about the longitudinal axis of the conveyor and coupled to the screw to rotate together with it.

3,685,639

Patent Not Issued For This Number

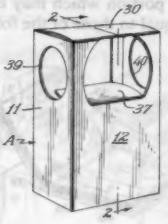
3,685,640

DISPLAY CARTON

William M. Tolaas, St. Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.

Filed Sept. 8, 1970, Ser. No. 70,397
Int. Cl. B65d *5/48, 77/00*
U.S. Cl. 206—44.11 4 Claims

A display carton comprises a rectangular structure having top and bottom closures. The interior of the carton is divided into upper and lower compartments by a platform flap cut from the front panel and folded to overlie the contents of the lower compartment. This provides a display window through which the portion of the contents of the carton above the platform flap may be viewed.



3,685,641

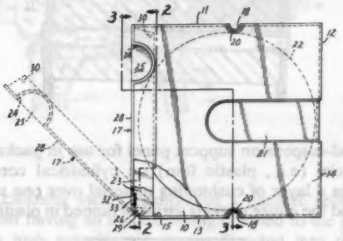
Patent Not Issued For This Number

3,685,642

REEL-STORAGE BOX

Paolo Benigno, and Fernando Primicerio, both of Naples, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed March 8, 1971, Ser. No. 121,786
Claims priority, application Italy, March 10, 1970, 35662 B/70
Int. Cl. B65d *85/67*
U.S. Cl. 206—52 F 5 Claims



A box for storing a reel (22) of tape or film including a hinged door (17) for closing the open front of the box. The top (11) and bottom (13) walls of the box are formed with a flute (18) having a lip (19) extending beyond one side wall (10) and a recess (20) for seating a lip of an identical box so that a plurality of the boxes may be interlocked in side-by-side relationship. The flute (18) in the bottom wall (13) is positioned to cause a stored reel (22) to roll partly out of the box when the bottom wall (13) is horizonta. and the door (17) opened.

3,685,643

METHOD OF PACKAGING A PLURALITY OF DISPOSABLE APRONS AND PACKAGE RESULTING THEREFROM

Ivan J. Garshelis, Clark, N.J., assignor to Research Associates, Inc., Linden, N.J.

Filed June 24, 1970, Ser. No. 49,335
Int. Cl. B65d *85/00*
U.S. Cl. 206—57 13 Claims

A method of packaging a plurality of disposable aprons and the package of aprons resulting therefrom. A stacked plurality of longitudinally folded disposable apron blanks, in which the aprons have been substantially formed have perforated removable portions formed therein. The stack of longitu-

dinally folded apron blanks is fastened to a substantially rigid backing member as by staples through the perforated removable portions so as to be singularly removable. The package includes an enclosure portion which may have overall dimensions substantially equal to those of the folded fastened stack,

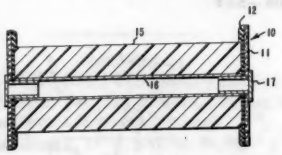
and a removable portion disposed within the enclosure. The removable portion includes the folded fastened stack. The staples may be located adjacent the longitudinal uppermost and lowermost edges of the perforated portion. The backing member forms a partition between adjacent portions of at least one fold in the stack.

3,685,644

PACKAGING ROLLS WITH IMPROVED END-SUSPENSION SUPPORT PANELS

Samuel Bynum Cothran, Florence, S.C., and Colin Alexander Henry, Princeton Junction, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 3, 1970, Ser. No. 60,422
Int. Cl. B65d *85/66*
U.S. Cl. 206—59 F **14 Claims**



An end-suspension support panel for use in packaging rolls of material (e.g., plastic film) on cylindrical cores, which panel has a layer of cushioning material over one side of the panel and the entire panel is shrink-wrapped in plastic film.

3,685,645

DEFIBRILLATION ELECTRODE PAD AND PACKAGE THEREFOR

Harold H. Kawaguchi, Seattle, Wash., assignor to Physio-Control Corporation, Seattle, Wash.

Filed Aug. 17, 1970, Ser. No. 64,207
Int. Cl. B65d *81/22, 31/12*; A61b *19/00*
U.S. Cl. 206—63.2 R **5 Claims**

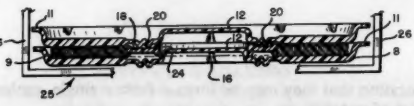
Absorbent pads soaked with a conductive solution are packaged in moistureproof packages in a manner which assures easy access to the pads under the emergency conditions normally associated with the use of defibrillation equipment. Two separate moistureproof containers in the form of plastic bags are sealed together with each bag containing a soaked pad. The two bags are so arranged and interconnected that the user can easily retrieve the pads for immediate application to the chest of a victim.

3,685,646

TAPE REEL CONTAINER

Jose C. Sy, South Norwalk, Conn., assignor to Audio Devices, Inc., New York, N.Y.

Filed July 13, 1970, Ser. No. 54,235
Int. Cl. B65d *1/34, 21/00, 81/00*
U.S. Cl. 206—65 K **9 Claims**



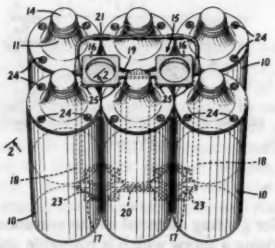
A tape reel container is disclosed which generally includes a tape reel supporting tray having a circular recessed portion which defines a tape reel supporting surface and a raised tape reel mounting plug disposed centrally of the circular recessed portion of the tray. The tape reel supporting tray further includes means adapted to cooperate with an adjacent tape reel container unit for holding said adjacent trays, when arranged in stacked relation, relatively immovable with respect to each other laterally and rotationally.

3,685,647

CONTAINER HAVING REGISTERING MEANS, CARRIER THEREFOR AND PACKAGE THEREOF

Gerald Erickson, P.O. Box 6175, Surfside, Fla.

Filed Sept. 17, 1970, Ser. No. 73,136
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 E **4 Claims**



A container having registering means formed at one end which makes it possible for the container to be locked in a carrier properly oriented with a cluster of other similar containers.

A container carrier having upper and lower connected container engaging means for engaging and locking together a cluster of containers and means interengaging with the registering means formed on the container.

A cluster of said containers locked together in said carrier to form a package.

3,685,648

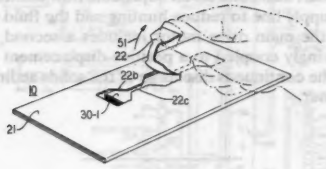
DISPENSING PACKAGE WITH ARTICLE-RETAINING TEAR STRIP

Harold M. Heller, North Brunswick, N.J., assignor to Dennison Manfacturing Company, Framingham, Mass.

Filed Sept. 1, 1970, Ser. No. 68,662
Int. Cl. B65d *73/00*
U.S. Cl. 206—78 B **6 Claims**

A package for the easy access storage of items, such as precut strips of embossing tape, that are desirably removed

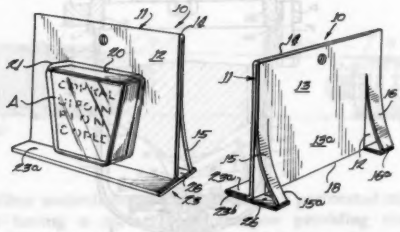
from storage one or a few at a time. The base of the package includes an access member which is in part wider and in part narrower than the items being stored and extends in the direction of their length. When the access member is removed, correspondingly wide and narrow access openings are produced which both permit and constrain the items to being slidably removed from storage.



3,685,649
PACKAGE CONSTRUCTION

Philip A. Diehl, St. Louis, Mo., assignor to Packaging Corporation of America, Evanston, Ill.

Filed Sept. 10, 1970, Ser. No. 70,984
Int. Cl. B65d *5/52, 73/00*
U.S. Cl. 206—78 B 13 Claims



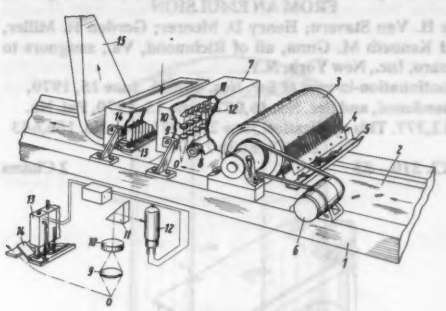
A package construction is provided which is adapted, when desired, to be adjusted so as to be self-supporting. The package includes a pair of panels arranged in face-to-face relation, and a third panel foldably secured to one panel of the pair. The third panel, when in one position of folded adjustment, being disposed transversely of said pair of panels and having portions thereof projecting forwardly and rearwardly. The other panel of said pair of panels is provided with an elongated strut which overlies a portion of the third panel, when in an unfolded position, and automatically assumes angular, abutting relation with a projecting portion of the third panel when the latter is disposed in a folded position.

3,685,650
METHODS AND APPARATUS FOR THE SELECTION OF FOREIGN BODIES OF SMALLER DIMENSIONS, FROM A MAIN MASS

Hans J. Walther, Ahrensburg, and Klaus J. Liepelt, Hamburg, both of Germany, assignors to B. A. T. Cigaratten-Fafriken GmbH, Hamburg, Germany

Filed Sept. 14, 1970, Ser. No. 72,013
Claims priority, application Germany, Sept. 15, 1969, P 19 40 615.0
Int. Cl. B07c *5/342*
U.S. Cl. 209—74 6 Claims

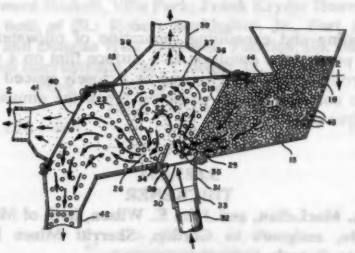
A method and an apparatus for removing foreign bodies from a main mass, especially from tobacco, by electrically optically monitoring the mass and pneumatically removing the foreign bodies.



3,685,651
PARTICLE CLEANING APPARATUS

Clarence R. Gruber, 9529 W. Ruby St., Milwaukee, Wis.

Filed Dec. 18, 1969, Ser. No. 886,127
Int. Cl. B07b *3/00*
U.S. Cl. 209—133 3 Claims



Particle cleaning means comprising a particle receiver, a first chamber having an input opening coupled to the particle receiver, a high velocity air stream directed into the first chamber adjacent the input opening for projecting particles into the first chamber for agitated movement under the influence of the air stream, a second chamber coupled to the first chamber through an opening spaced from the input opening, a baffle between the openings to force the particles in a circuitous path through the first chamber, a first suction means coupled to the first chamber and an opposed relation to the air stream and a discharge opening in the lower end of the second chamber, and second suction means coupled to the second chamber and an opposed relation to the second opening and the discharge opening.

3,685,652
FLOTATION RECOVERY OF MIRABILITE FROM SALT COMPLEXES

Elie M. Chemtob, Claremont, and Rolando V. Marcote, La Verne, both of Calif., assignors to Occidental Petroleum Corporation

Filed Aug. 6, 1969, Ser. No. 848,070
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 11 Claims

Sulfonated alkenes, sulfonated unsaturated petroleum fractions and fatty acids serve as collector reagents for the forth flotation of mirabilite from salt complexes, particularly a mirabilite-natron salt complex.

3,685,653

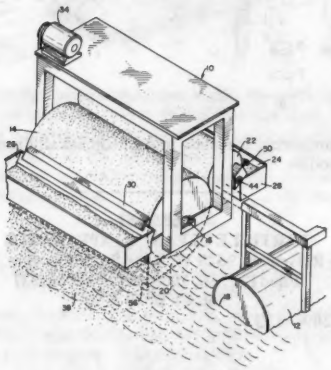
METHOD FOR THE SEPARATION OF OIL AND WATER FROM AN EMULSION

Merle H. Van Stavern; Henry D. Moorer; Gordon H. Miller, and Kenneth M. Gunn, all of Richmond, Va., assignors to Texaco, Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 46,056, June 15, 1970, abandoned, and Ser. No. 46,057, June 15, 1970, Pat. No. 3,612,277. This application June 25, 1971, Ser. No. 156,643

Int. Cl. E02b *15/04*

U.S. Cl. 210—83 2 Claims



Facilitating and expediting separation of oil/water emulsions by passing the emulsion as a surface film on a rotating pick-up roller into a bight formed by a closely spaced parallel rollers to coalesce the oil particles, break the emulsion and liberate free oil.

3,685,654

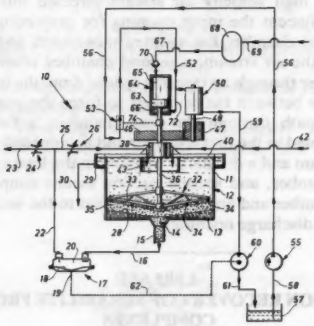
THICKENER

James A. MacLellan, and John E. Wilson, both of Manitoba, Canada, assignors to Gordon, Sherritt Mines Limited, Toronto, Ontario, Canada

Filed March 22, 1971, Ser. No. 126,840

Int. Cl. B01d *21/06, 21/20*

U.S. Cl. 210—97 10 Claims



A thickener for the concentration of a solids-liquid suspension includes a vessel or tank into which such a suspension is continuously introduced and a rotating rake assembly for exerting mechanical pressure on the solids-sediment layer settling in the bottom of the vessel. The rake assembly is carried by a main shaft which undergoes vertical movement automatically in response to the hydraulic pressure in a fluid supply line feeding a main hydraulic motor drivingly coupled to the main shaft. The variation in the supply line pressure is transferred to a hydraulic chamber of a double-acting cylinder housing a piston which is mechanically coupled to the main shaft for conjoint vertical movement therewith. Air contained within a pneumatic chamber of the double-acting cylinder upwardly of the piston provides a buffer action for such automatic adjustment of the vertical position of the main shaft. Movement of the main shaft also controls an adjustable flow control valve in the fluid supply line to reduce hunting and the fluid discharge line from the main drive motor includes a second hydraulic motor drivingly coupled to a positive displacement pump for affecting the continuous discharge of the solids-sediment from the thickener.

3,685,655

AUTOMATIC WATER DRAINING DEVICE FOR FUEL FILTER

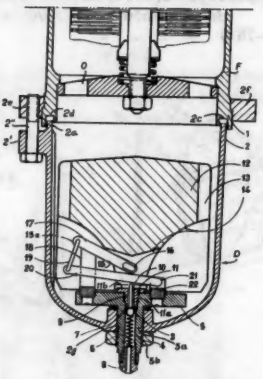
Jacques Muller, 123 Ave. du Genl. de Gaulle, La Garenne-Colombes, France

Filed Nov. 13, 1970, Ser. No. 89,261

Claims priority, application France, July 3, 1970, 7024688

Int. Cl. B01d *35/16*

U.S. Cl. 210—114 2 Claims



An automatic draining device for a fuel filter which comprises a receptacle to receive the water discharged by the filter, the receptacle having a discharge outlet with a normally closed valve, the opening of which is connected by a lost motion linkage to a float positioned in the receptacle which will rise as water accumulates in the receptacle and which will open the valve controlling the discharge outlet only when the water level has reached a predetermined amount.

3,685,656

RECIRCULATING OZONE TREATMENT APPARATUS

Richard J. Schaefer, 16852 Murray Hill Ave., Detroit, Mich.

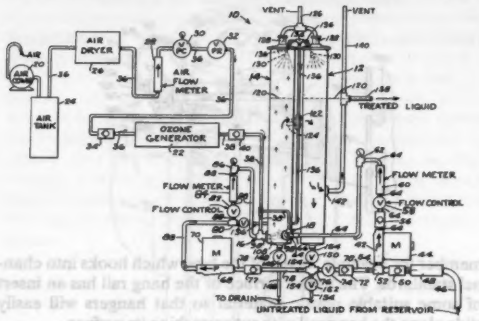
Filed March 11, 1971, Ser. No. 123,145

Int. Cl. C02b *3/09*

U.S. Cl. 210—195 14 Claims

An apparatus for the recirculating treatment of contaminated liquids with ozone having venturies which mix ozone with contaminated liquid and discharge the mixture into a treatment tank. A holding tank is connected to and receives liquid from the treatment tank and a portion of this liquid is recirculated through the venturies and treatment

tank. The extent to which the contaminated liquid is exposed to and treated by ozone is controlled by varying the rate at which the liquid is recirculated in relation to the rate at which treated liquid is discharged from the holding tank.

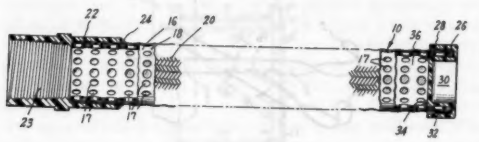


3,685,657

FILTER UNDERDRAIN ASSEMBLY AND METHOD OF PRODUCING SAME

Bruce H. Hunter, 53 Oak Road, Long Meadow, Mass., and Norbert L. Reiner, 21 Blakeslee Road, Wallingford, Conn.

Filed March 16, 1971, Ser. No. 124,725
Int. Cl. B01d *23/20*
U.S. Cl. 210—289 **9 Claims**



A filter underdrain assembly employs a perforated strainer body having a surface configuration providing circumferentially extending recesses. A fabric covering on the strainer body serves to separate particulate matter from the liquid passing therethrough, and plaiting of the fabric directly upon the surface of the strainer body results in interengagement therebetween. This reduces the normal tendency for relative axial movement to occur between the fabric covering and the body, particularly during backwashing operations.

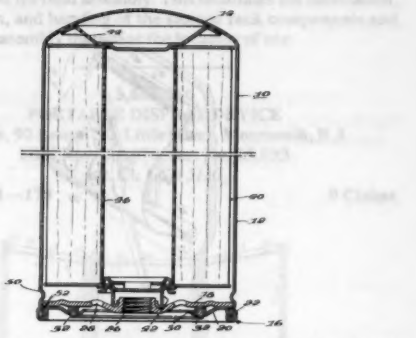
3,685,658

LIQUID FILTERS

Jesse A. Baldwin, Kearnesy, Nebr., assignor to J. A. Baldwin Manufacturing Company, Kearnesy, Nebr.

Filed Nov. 2, 1970, Ser. No. 86,027
Int. Cl. B01d *45/00*
U.S. Cl. 210—440 **3 Claims**

A spin- or thread-on type oil filter whose filter housing which mounts within its interior space the filter element or cartridge comprises a cylindrical, thin sheet-metal shell or can body closed at one end by an integral dome-shaped end wall and at its other end by a separately fashioned closure plate assembly made up of a heavy-gauge metal base plate whose outer rim portion is planar and has diameter substantially equal to the inner diameter of the shell, and an annular sheet metal seaming cover which is lock-seamed along its outer peripheral or rim portion to the open-end wall portion of the shell and extends radially inwardly therefrom and in flush engagement with the under (outer) face of said base plate, the improvement comprising radially inwardly directed circumferential beads or formations rolled or otherwise provided in the cylindrical wall of the shell at locations immediately above (axially inwardly of) and below (axially outwardly of) the base plate, said circular beads serving as lock-shoulders which lock the base plate against movement in either axial direction relative to the shell and/or seaming cover.

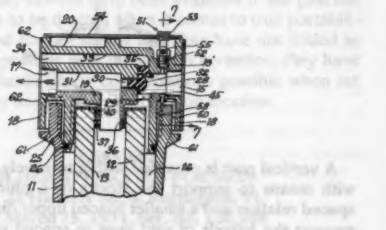


3,685,659

FILTER ASSEMBLY HAVING REMOVABLE FILTER ELEMENT

Don Edward Heskett, Villa Park; Frank Kryder Hoover, Evanston, both of Ill.; Robert Burkhalter, Jr., Fort Atkinson, Wis., and Douglas West Anderson, Palatine, Ill., assignors to Morton International, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,376
Int. Cl. B01d *29/00*
U.S. Cl. 210—444 **18 Claims**



This disclosure relates to water filtering apparatus, employing a replaceable filter element, supported in an assembly having a removable bowl. A deformable seal is provided between the stationary part of the assembly and the bowl, and the upper portion of the bowl extends above the seal to receive water drained from the stationary part during removal and replacement of the filter element. A valve, operative to pass a slight flow of fluid to the exterior of the unit when the bowl is not properly assembled with the stationary part, closed when the apparatus is correctly assembled, indicates proper assembly of the parts.

3,685,660

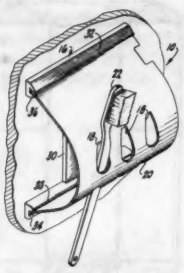
TOOTHBRUSH HOLDER

John H. Saunders, 3958 Brule Court, Sacramento, Calif.

Filed Nov. 23, 1970, Ser. No. 91,776
Int. Cl. A47f *7/00*
U.S. Cl. 211—60 R **9 Claims**

A device for holding articles such as toothbrushes in easily accessible position under sanitary conditions. An initially flat,

flexible plate formed with pairs of openings is provided with a removable sanitary film layer covering the openings. The plate is bowed outwardly and inserted in a mounting bracket



enabling a user to strip off the film and insert a toothbrush handle in yieldable engagement through a pair of aligned openings.

3,685,661

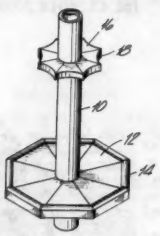
REVOLVING GUN CABINET

Ray D. Kimmel, Ashland, Pa., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,893

Int. Cl. A47f 7/00; A47b 81/00

U.S. Cl. 211—64 **2 Claims**



A vertical post is provided with a relatively large lower disc with means to support the stocks of a plurality of guns in spaced relation and a smaller spaced upper disc with means to support the barrels of said guns in spaced relationship. The post and discs are rotatable manually about the post axis whereby a user can rotate same to obtain access to any gun desired.

3,685,662

HANG RAIL CONSTRUCTION AND BRACKET THEREFOR

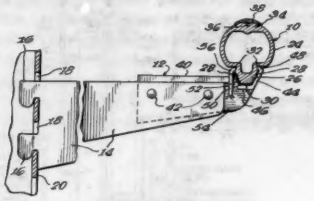
Albert S. Varon, and Burton L. Siegal, both of Skokie, Ill., assignors to Crown Metal Manufacturing Co., Chicago, Ill.

Filed Nov. 27, 1970, Ser. No. 93,091

Int. Cl. A47h 1/02

U.S. Cl. 211—105.1 **28 Claims**

A hang rail is provided which comprises a hollow extruded tube with a protrusion or rib along its bottom side having a pair of opposed grooves. A bracket is provided to support the hang rail formed with front and rear flanges or arms and a lower supporting structure between the flanges or arms. Each flange or arm has at least one inwardly bent hook portion. The rail is pushed downwardly with the protrusion or rib entering between the flanges or arms, separating the hook portions slightly so that they can snap into the grooves when the bottom end of the protrusion or rib comes into engagement with the lower supporting structure. The bracket is mounted to a support member to be secured to a standard, the support



member for example, being of the type which hooks into channel standards. The upper surface of the hang rail has an insert of some suitable plastic material so that hangers will easily slide along the hang rail without scratching its surface.

3,685,663

CLAMP

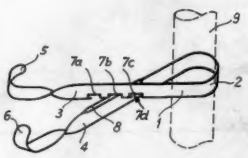
Albert Hoeffleur, Alte Landstrasse 29, CH-8700 Kusnacht, Switzerland

Filed June 23, 1970, Ser. No. 49,018

Claims priority, application Switzerland, July 3, 1969, 10157/69

Int. Cl. F16m 13/02

U.S. Cl. 211—107 **5 Claims**



A clamp adapted to be fixed to a rod-like member for use as a bracket or hanger and comprising a substantially U-shaped spring steel band having a curved middle portion and two intersecting arms each having a hook at its end, and means forming a connection between the cross-over point of the arms.

3,685,664

TURNABLE DISPLAY DEVICE

Jerome D. Kramer, New York, N.Y., assignor to Howard Displays, Inc., New York, N.Y.

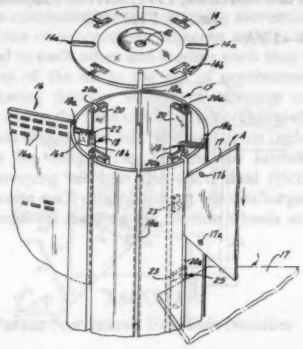
Filed Nov. 9, 1970, Ser. No. 87,938

Int. Cl. A47f 3/14

U.S. Cl. 211—131 **8 Claims**

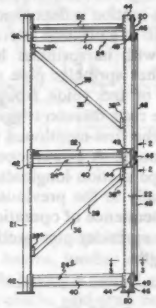
The present invention relates to improvements in turntable or rotatable display devices on which a great variety of wares, merchandise and the like may be accommodated for sale, display, distribution, etc. The device principally consists of a tubular aluminum and like extrusion element, which is rotatably connected to a central supporting post via a thrust bearing and the like and may be turned about said post to assume different locations relative to said post. This extruded body or element is of a special profile in cross-section and is employed to support a plurality of lengthy partitions, between which display sections are created, in which through suitable connection between each tray or shelf and said extruded element the partitions are maintained in position and stabilized during their operation and in their assembly, although said partitions may be manufactured from relatively thin sheet metal, e.g., aluminum, steel and the like or even from plastic material. The crux of the invention is to couple and anchor the partitions as

well as the display trays on a single central tubular body which is profiled in cross-section to facilitate anchorage of all the



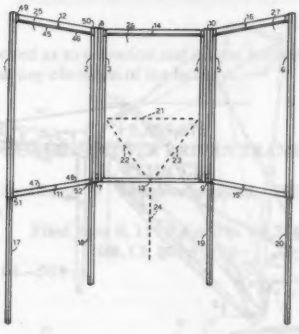
vital parts of the new display device onto a central and tubular column constituting the extruded body.

3,685,665
KNOCKDOWN STORAGE FRAME AND COMPONENTS
Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio
Filed Oct. 23, 1970, Ser. No. 83,412
Int. Cl. A47f 5/10
U.S. Cl. 211—177 **13 Claims**



A storage framework composed of a plurality of storage frame elements or components assembled into a storage rack for use in an automatic warehousing system. The framework comprises generally parallel rows of vertical columns with each of the columns being of generally double wall, hollow channel-shape in horizontal section, with the hollow arm portions of the channel configuration forming tubular-like sections, and with the cross web of the channel configuration connecting the aforementioned tubular sections, comprising plural abutting walls. Load carrying means are spaced vertically along the columns and define the storage volumes in the storage rack. The load carrying means comprise assemblies including spaced end portions which have recess means formed therein for receiving the confronting one of the columns in nested relationship therein for securing the load carrying assembly to the associated columns. In one embodiment, the assembly includes load support rails extending generally the full depth of the respective storage volume, and with such rails being oriented laterally outwardly from the end portions for supporting loads thereon in bridging relationship across opposing pairs of the rails. In another embodiment, spaced stub supports are utilized for supporting loads in bridging relationship. The arrangement is such so as to provide high strength to the columns which are torsionally strong and rigid due to their novel structural arrangement, resulting in a high strength, rigid due to their novel structural arrangement, resulting in a high strength, rigid rack assembly, and a rack assembly wherein the component parts thereof can be readily fastened into position for field assembly. This facilitates the fabrication, preparation, and handing of the storage rack components and facilitates assembly thereof at the location of use.

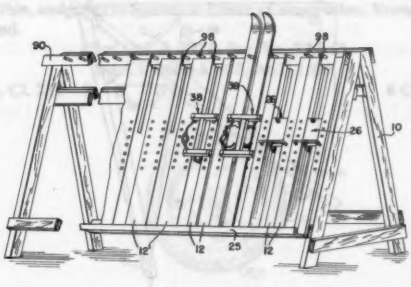
3,685,666
PORTABLE DISPLAY DEVICE
Sidney Rose, 92 Laurel St., Little Silver, Monmouth, N.J.
Filed Nov. 2, 1970, Ser. No. 85,893
Int. Cl. A47f 5/10
U.S. Cl. 211—178 **9 Claims**



A portable display device comprising collapsible frame members which open into a series of rectangles for receiving rectangular panels and extendible legs. Refinements to permit collapsing into a small compact form for easy transportation and with aids to quick and easy set up into a strong and stable display device. Additional features turn the device into a compact still picture or movie theatre.

Portable display devices have been available in the past but they leave much to be desired when it comes to true portability, versatility and ease of setting up. They have not folded as compactly as is possible with the present invention; they have not been as versatile in the configurations possible when set up; nor have they been so easy to set up on location.

3,685,667
HOLDER APPARATUS FOR SKIS
William W. Bell, 25 Hanover St., S. Burlington, Vt.
Filed March 15, 1971, Ser. No. 124,298
Int. Cl. A47f 7/00
U.S. Cl. 211—60 SK **9 Claims**



A hand carrier for ski equipment. In a first embodiment the carrier includes first and second arms capable of retaining ski equipment, such as skis and poles, securely together and permitting them to be easily and safely carried. The carrier can be

fastened to a ski rack when not in use so that the ski equipment is securely stored during such times. There is also provided a carrier for retaining skis and including a strap permitting the carrier to be suspended over the shoulder of the user so that he may carry the skis while walking with both hands free.

3,685,668

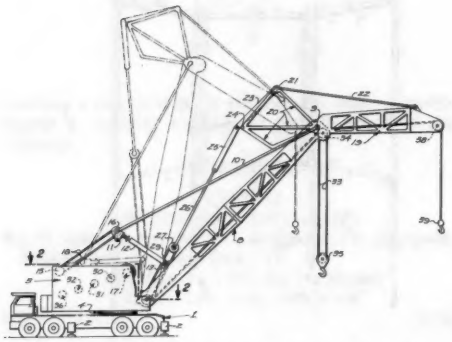
CONVERTIBLE LEVEL LUFFING CRANE

Don Suverkrop, Bakersfield, Calif., assignor to Hopper, Inc., Bakersfield, Calif.

Filed Oct. 3, 1969, Ser. No. 863,510

Int. Cl. B66c *23/00*

U.S. Cl. 212—8 A **9 Claims**



A crane having a multiple drum hoist structure to which is pivotally attached an inner boom which in turn pivotally supports an outer or jib boom. A pair of the drums are connected to the booms through multiple sheaved lines in such a manner that when the drums are rotated in unison by means of a single control lever, the two booms are caused to perform an essentially level luffing operation A tower boom may be interposed between the inner boom and the hoist structure while retaining the ability to cause level luffing operation of the inner boom and jib boom.

3,685,669

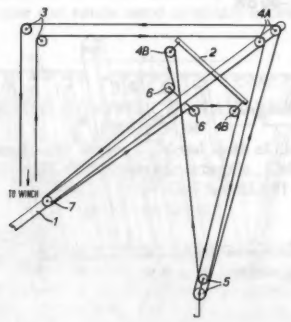
DERRICK CRANES AND SWINGING DERRICKS

Robert Morrison, Greenock, Scotland, assignor to Speedcranes Limited, Gourock, Scotland

Filed May 4, 1970, Ser. No. 34,398

Int. Cl. B66c *23/06*

U.S. Cl. 212—58 **4 Claims**



The invention relates to means provided in the rigging of a derrick crane for preventing or controlling a pendulum movement of the load during a slewing operation.

3,685,670

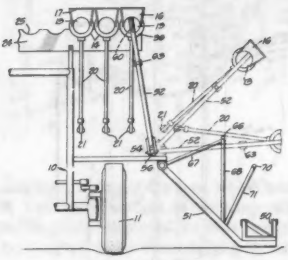
APPARATUS FOR LAYING SPRINKLER PIPE

Fred G. Meyers, P.O. Box 5488, Oildale, Calif.

Filed March 26, 1971, Ser. No. 128,440

Int. Cl. F16l *1/00*

U.S. Cl. 214—1 PA **14 Claims**



Sprinkler pipe sections supported on a wheeled carriage are connected end-to-end and deposited on the ground to form a pipeline as the carriage rolls forward. Each sprinkler pipe section is equipped with coupling parts at opposite ends thereof and is provided with a riser and sprinkler head. A plurality of such sprinkler pipe sections are supported longitudinally on the carriage, each with its riser hanging down by gravity. Feed apparatus moves the sprinkler pipe sections laterally toward a loading position. Transfer mechanism including pivoted arms engage the ends of each pipe section as it reaches loading position and transfers it to a longitudinal guide trough supported on the carriage near the ground and outside the wheels. The forward end of the pipe section is deposited in the trough and the rear end is supported in a position laterally offset from the trough, and the riser with its sprinkler head is held in an upright position. Another sprinkler pipe section, previously deposited, moves out of the guide trough as the carriage moves forward, and the riser thereon triggers a mechanism to shift the offset end of the first-mentioned sprinkler pipe section into the guide trough. A power operated device then moves the sprinkler pipe section longitudinally in the trough to couple it automatically to the previously-deposited sprinkler pipe section. The sequence of operation is repeated until the pipeline formed by sprinkler pipe sections on the ground reaches the desired length.

3,685,671

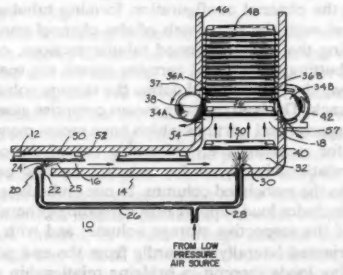
STACKING LIGHTWEIGHT PLASTIC ARTICLES

Lee R. Layman, Windsor Locks, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed March 25, 1970, Ser. No. 22,422

Int. Cl. B65g *57/30*

U.S. Cl. 214—6 BA **6 Claims**



A method for automatically stacking lightweight plastic articles being ejected from plastic shaping equipment which involves air conveying the articles in tandem away from the

shaping equipment to a transition zone without changing the orientation of the articles from that existing on ejection from the shaping equipment, turning or changing the direction of movement of the articles in the transition zone by means of the air while continuing the air conveying movement such that the peripheries of successively adjacent articles are substantially parallel to each other and feeding each thus turned article by means of the air to the nip of continuously and oppositely rotating friction wheels to advance each article through the nip to the base of an ever-increasing stack resting on the wheels beyond the nip. The apparatus includes a conveying duct for the articles, means for introducing high velocity conveying air into the duct, dual friction wheels aligned opposite each other adjacent the discharge end of the duct and means for rotating the friction wheels at a constant speed.

3,685,672

Patent Not Issued For This Number

3,685,673

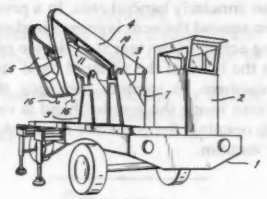
SIDE-LOADING SELF-PROPELLED MATERIAL TRANSPORTING DEVICE

Robert W. Schweis, Houston, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 725,014, April 29, 1968, abandoned. This application May 28, 1970, Ser. No. 41,215

Int. Cl. B60p *1/48*

U.S. Cl. 214—77 **5 Claims**



A device for loading, transporting and unloading material, such as pipe, steel beams, lumber and the like, comprising a self-powered vehicle having a pair of arms pivotally mounted on the bed of said vehicle, said arms being jointed and having hydraulic winches in the heads thereof, with hydraulic stabilizing means mounted on said vehicle on the side opposite the base of said arms. The device further includes an engine centrally mounted below the bed on which loads are positioned, extensible gantries and booms, a rotatable control position and is adaptable for utilizing hooks, magnets, forks and other types of lifting mechanisms. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,685,674

VEHICLE WITH SELECTIVE LOAD-HEIGHT AND DUMPING CAPABILITIES

Dirk Bruer, Gottmadingen; Siegfried Schaible; Ernst Wagenblast, both of Singen, and Heinz Hohlwegler, Gottmadingen, all of Germany, assignors to Maschinenfabrik Fahr Aktiengesellschaft, Gottmadingen, Germany

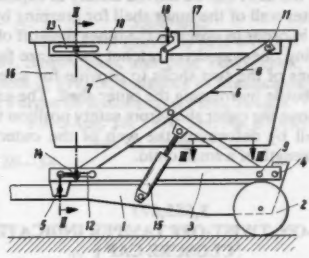
Filed Jan. 26, 1970, Ser. No. 5,778

Claims priority, application Germany, Jan. 31, 1969, P 19 04 830.7

Int. Cl. B65g *65/36*

U.S. Cl. 214—314 **14 Claims**

An agricultural vehicle comprises a container carried on opposite sides by linkages for ensuring parallel lifting and lower of the container. The container is adapted to be tipped for the discharge of its contents. The container has a linkage which



can be locked as to elevation and means for tilting the linkage and load at any elevation of the latter.

3,685,675

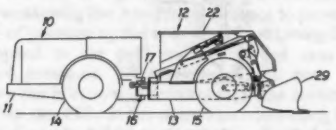
SELF-LOADING POWER DRIVEN TRANSPORTING VEHICLES

Nils O. Sundberg, 7 Tunnbindargrand, 702 23 Orebro, Sweden

Filed June 8, 1970, Ser. No. 44,356

Int. Cl. B60p *1/04*

U.S. Cl. 214—501 **8 Claims**



A transporting vehicle suitable for underground use has a forwardly tiltable container and a power shovel for loading the container. The shovel is pivotably mounted on two arms and two links, all of which are pivotably mounted on the container. The arms and the links cross each other when the shovel is in a digging position, but they are substantially parallel when the shovel is in a raised discharge position. The arms can be locked in the discharge position relative to the container so that the power jacks for swinging the arms and thereby the shovel can be used also for tilting the container forwardly into dumping position.

3,685,676

DOUBLE SHELL CHILD-PROOF BOTTLE CAP

Peter P. Gach, Evansville, Ind., and Henry K. Leonard, Toledo, Ohio, assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Oct. 2, 1970, Ser. No. 77,663

Int. Cl. B65d *55/02*; A61j *1/00*

U.S. Cl. 215—9 **6 Claims**

A child-proof screw on cap of the double shell type for a medicine bottle or the like. The cap has an inner threaded shell which fits the bottle neck and an outer shell which telescopingly overlies and encloses the inner shell when in

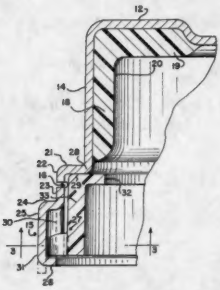
safety position. The two shells are connected together by an axial pivot and are relatively rotatable. The outer shell has a top and a skirt and a deformable web connecting the top and skirt whereby the skirt can be moved axially to expose at least part of the outer wall of the inner shell for grasping by the fingers of a user in order to unscrew the inner shell off of the bottle. Cooperating one-way drive ratchet means are formed on mating portions of the two shells to provide for screwing the cap onto the bottle by rotating the outer shell. The axial force required to move the outer shell from safety position to expose the inner shell by deforming the web of the outer shell, is beyond the strength of a small child.

3,685,677

PRESS-ON, TWIST-OFF TAMPER INDICATING CLOSURE CAP

James E. Westfall, Western Springs, Ill., assignor to Continental Can Company, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,367
Int. Cl. B65d *41/02*
U.S. Cl. 215—42 **7 Claims**



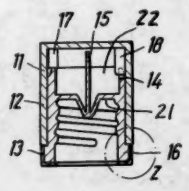
A tamper-indicating closure is provided of a type wherein a closure cap having a side liner is pushed on-to a threaded finish so as to form complementary threads in the liner for twistably removing the cap. A resiliently expansible plastic ring is held in the cap skirt against rotation and endwise movement relative thereto. An inturned lip on the ring engages under a collar on the finish below the threads when the cap is pushed on. The edge of the lip also engages serrations around the finish. When the cap is twisted for removal, the engagement of the lip under the collar and with the serrations inhibits rise and rotation of the cap. The applied torque causes rupture of a series of frangible bridges forming a band around the skirt, whereafter the upper portion of the cap twists off.

3,685,678

SCREW CAP FOR A CONTAINER

Hermann Ritzenhoff, Marburg an der Lahn, Germany, assignor to Gebruder Seidel KG, Marburg/Lahn, Germany

Filed July 29, 1970, Ser. No. 59,254
Claims priority, application Germany, Aug. 4, 1969, P 19 39 553.0
Int. Cl. B65d *41/04*
U.S. Cl. 215—43 A **8 Claims**



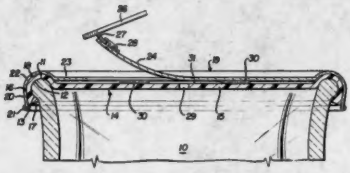
The invention provides a screw cap for a container wherein the cap has inner and outer sleeves, with a sealing member within, integral and transverse to the inner sleeve. The inner sleeve and sealing member are of hard plastics material, but the sealing member is thin enough to be sealingly resilient. A chamber between the sealing member, and a closed end of the outer sleeve prevents diffusion of aroma through the cap from the container.

3,685,679

VENTED CLOSURE

Vernon C. Heffran, 541 Loomis Drive, Perrysburg, Ohio

Filed Feb. 22, 1971, Ser. No. 117,510
Int. Cl. B65d *41/60*
U.S. Cl. 215—56 **16 Claims**



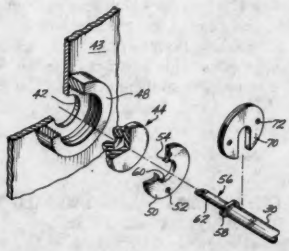
This disclosed invention is a composite closure for a hermetically sealed container consisting of an elastomeric liner cap and a metal convenience opening outer cap. The liner cap has a central vent aperture and surrounding the vent the outer surface of the liner cap is adhesively attached or bonded to the metal cap in an annularly banded area. In a pressure package, the sealed area around the vent is pressurized and upon opening, the tearing action of the tear strip device of the outer cap also separates the bond of the adhered band venting the container to atmosphere. In vacuum packages, the opposite is true, i.e. the area inside the bonded band is vacuumized and upon tear strip opening, the container is vented to atmosphere to release the vacuum.

3,685,680

PERITONEAL DIALYSIS DELIVERY UNIT USING HOME-PREPARED DIALYSATE

Heinrich A. M. Tenckhoff, and George Shilipetar, both of Seattle, Wash., assignors to The Battelle Development Corporation, Columbus, Ohio

Filed June 8, 1970, Ser. No. 44,026
Int. Cl. B65d *17/16*; A61j *1/00*
U.S. Cl. 220—27 **14 Claims**

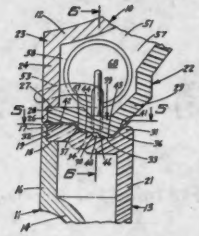


An apparatus and technique are disclosed whereby patients undergoing maintenance peritoneal dialysis can prepare and administer their own dialysate at home, using locally available water and a dialysate concentrate which is more economically and logistically practicable to make available to such patients than is the larger-volume mixture of the concentrate with the water.

3,685,681
CONTAINER SEAL

Floyd L. Foslien, 4001 Parkland Ave., Lake Elmo, Minn., and Terry N. Nelson, 1367 Blair, St. Paul, Minn.

Filed July 2, 1970, Ser. No. 52,007
Int. Cl. B65d *53/06, 53/00*
U.S. Cl. 220—45 17 Claims

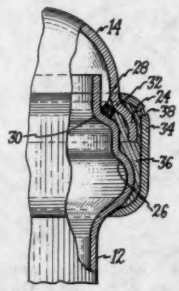


A container, as a casket, having a body with a peripheral body flange closed with a cover having a peripheral cover flange commensurate with the body flange, and a continuous passageway located between the flanges for receiving sealing material from an injector to bond or weld the flanges together. The injector, located in the cover, has a bottle of sealing material and an actuator operable to force the sealing material from the bottle into the passageway.

3,685,682
HERMETIC SEALING SYSTEM

Langdon T. Frey, III, Newton, N.C., assignor to General Electric Company

Filed Nov. 2, 1970, Ser. No. 85,886
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 R 10 Claims

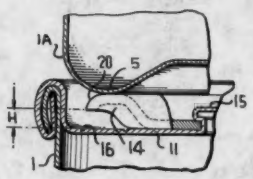


An hermetic sealing system for openings in an enclosure. In one form a cover is provided having an edge fitting over a container having a lip with the cover fitting loosely over the lip of the container. A flexible gasket member is provided between the lip of the container and the edge of the cover. A metal band is provided encircling the mating portions of the container and the cover compressing the flexible gasket between such mating portions. A mastic such as a room temperature cure epoxy is forced into the space between the metal band and the container, the mastic also filling the space between the edge of the cover and lip of the container and moving into contact with the flexible gasket. The mastic is then cured, firmly sealing the cover to the container. If desired, the metal band may be treated with a release agent and then removed after the mastic is cured. In another form, a bushing member surrounds an opening in a wall and is bolted to the wall. A channel in the base of the bushing carries a flexible gasket member compressed against the wall member about the opening. A second channel in the base of the bushing is filled with a mastic which when cured seals the bushing to the wall member.

3,685,683
END FOR EASY OPENING CAN

Emile Billy, Saint-Cloud, and Jean Ethevenaux, Meudon Bellevue, both of France, assignors to Etablissements J. J. Carnaud & Forges De Basse-Indre, Paris, France

Filed Aug. 28, 1970, Ser. No. 67,895
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 6 Claims

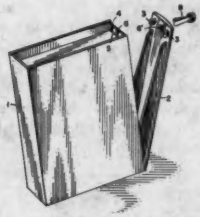


This disclosure relates to a pull ring for an easy opening container, particularly cans having bottoms which are integrally formed and which include downwardly projecting portions adapted to facilitate the stacking thereof. The pull ring is provided with a nose construction which results in the spacing of the effective part of the nose from an associated underlying weakening line a sufficient distance to prevent the application of pressure by the nose of the weakening line due to loads applied to the pull ring by stacked cans or other downward pressures. The spacing of the nose from the weakening line is in no way detrimental to the normal mode of opening the can while at the same time eliminating the risk of unintended rupture along the weakening line when the cans are stacked or packaged in cartons or during handling.

3,685,684
PLASTICS BOX FOR MAGNETIC RECORDING MEDIA IN TAPE FORM, PARTICULARLY REELS OF MAGNETIC TAPE

Robert Schindler, Baden-Baden; Kurt Schmidts, Willstaett, and Wolfgang Wiegel, Kirchheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed June 5, 1970, Ser. No. 43,791
Claims priority, application Germany, June 9, 1969, G 69 22 910.3
Int. Cl. B65d *43/16*
U.S. Cl. 220—60 R 5 Claims



A closable container in the form of a one-piece plastics molding serving as an archive box for magnetic recording media in tape form which, without additional packaging, can be sent by post, narrow and wide ribs in its interior being appropriately dimensioned for the reception of a compact cassette or a reel of tape 3 in. in diameter.

3,685,685

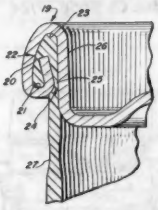
PLASTIC-METAL CAN

James A. Phillips, Monrovia, Calif., assignor to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 812,843, April 2, 1969, abandoned. This application March 9, 1971, Ser. No. 122,373

Int. Cl. B65d 7/42

U.S. Cl. 220—67 7 Claims



A plastic-metal can comprising a plastic container and a metal cover, said cover and container being double seam sealed together, said double seam comprising: at least two points where the plastic of the double seam is compressed to a thickness less than one-half of its original thickness before seaming, the plastic container being further defined in that it is fabricated from a plastic selected from plastics having a modulus of elasticity which is between about 0.10×10^6 and about 0.40×10^6 psi.

3,685,686

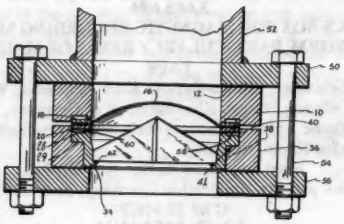
PRECISE SAFETY DEVICE

John H. Raidl, 6625 Milhaven Drive, Mission, Kans.

Filed Dec. 29, 1969, Ser. No. 888,394

Int. Cl. B65d 47/36

U.S. Cl. 220—89 A 3 Claims



A precise, reverse-acting, frangible disc pressure device is provided with a factory assembled, frangible member sub-assembly having a pre-bulged frangible disc with its annular flange secured between first and second seating rings. The frangible disc sub-assembly and a co-acting knife blade sub-assembly are mounted in annular grooves on the mating faces of flanges. A particular feature is the supporting of the downstream disc seating ring against an annular seat on the knife blade sub-assembly so that the device will not seal against pressure in the event the knife blade sub-assembly is inadvertantly omitted.

3,685,687

HORIZONTALLY STACKABLE TRAY

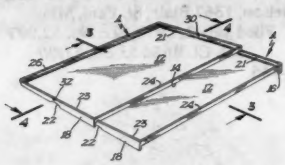
Thomas Harold Eckdahl, Brooklyn Center, Minn., assignor to Plastics, Inc., St. Paul, Minn.

Filed Aug. 12, 1970, Ser. No. 63,184

Int. Cl. B65d 21/02

U.S. Cl. 220—97 R 6 Claims

A tray for serving food adapted to be stacked horizontally with a similar tray including a bottom, locking means between the trays when one tray is arranged partially overlying a portion of a similar tray including engaging means on each tray



engageable with companion engaging means on the overlying trays together with means for vertically stacking the trays.

3,685,688

Patent Not Issued For This Number

3,685,689

AUTOMATIC-DELIVERY APPARATUS FOR VENDING UNSTACKABLE GOODS

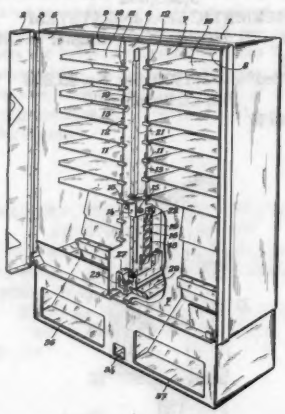
Helmut Borner, Solingen-Ohligs, and Robert Herz, Bad Godesberg, both of Germany, assignors to Andreae & Mayer GmbH, Koln, Germany

Filed Sept. 8, 1970, Ser. No. 70,058

Claims priority, application Germany, Aug. 31, 1971, P 20 43 020.0; Aug. 31, 1971, P 20 43 021.1

Int. Cl. G07f 11/06

U.S. Cl. 221—90 14 Claims



A vending machine in which the compartments for the articles to be dispensed are formed by horizontal flaps pivotally supported at the rear edges and supported at the front edges by cam elements which can be moved to release the respective flaps so the article in the respective compartment will droo to a discharge opening in the machine. A coin controlled actuating element is provided for actuating a ratchet mechanism that operates a slide in the machine which will move the cam elements into flap releasing position in succession from the bottom toward the top.

3,685,690

CREDIT CARD AUTOMATIC CURRENCY DISPENSER

Marion R. Karecki, Dallas; George R. Chastain, Irving, and Thomas R. Barnes, Dallas, all of Tex., assignors to Docutel Corporation, Dallas, Tex.

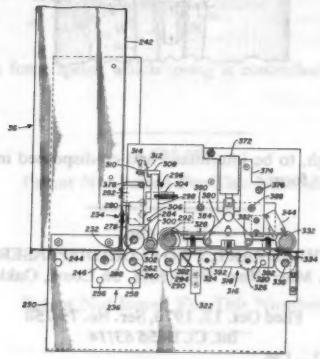
Filed July 28, 1970, Ser. No. 58,888

Int. Cl. G07f 11/26

U.S. Cl. 221—218 22 Claims

A currency dispenser automatically delivers a medium of exchange in packets in response to a coded credit card

presented thereto. The coded credit card is presented to the currency dispenser and an initial check is made to determine if the card has the proper format. After checking the credit card format, coded information thereon is evaluated to check the user's identity prior to authorizing him to receive cash from the machine. When each of several additional checks of the credit card code have been completed, the old code is removed and substituted with a new code. The new code contains the same information as the old but updated to reflect an additional currency dispensing transaction. Both the original code and the updated code are scrambled in accordance with



a changing key. Scrambling the credit card code after each use thereof minimizes the chance of unauthorized use of the currency dispenser. When the checks of the credit card code indicate the user is entitled to receive the amount of currency he has selected, a storage container for the packets of currency transports the required number of packets by a positive feed drive to a cash drawer. The cash drawer opens to a detent position which allows the customer to then move the drawer to a fully open position to remove his currency. Upon release of the cash drawer, it returns to a partially opened position from which it automatically closes after a preset time limit.

3,685,691

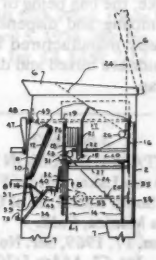
NEWSPAPER DISPENSING MACHINE

Andre Charest, 7310 Champchevrier Street, Montreal, Quebec, and Luc Charest, 8347 Chateauneuf Street, Ville d'Anjou, Quebec, both of Canada

Filed Sept. 22, 1970, Ser. No. 74,304

Int. Cl. B65h *1/08, 3/32*

U.S. Cl. 221—225 **9 Claims**



Newspaper dispensing and vending machine arranged to dispense one newspaper at a time and constructed to be coin-operated. A newspaper dispensing machine wherein the newspapers are placed side by side in upright position forming a stack abutting at one end against a newspaper extracting disc and at the opposite end against a spring biased pressure plate. The extracting disc has a radially extending opening and a pointed edge portion arranged to slip between a first and a second newspapers, causing the former to pass through the radially extending opening, resulting in extraction of the first newspaper from the stack. A roller provided with one or more prongs is mounted along the edge of the first newspaper to bend the latter to assist slipping the pointed edge portion intermediate the first and the second newspapers. A landing plate portion is arranged to receive a newspaper extracted by the disc and an ejecting mechanism is cooperatively associated to the landing plate portion to eject a newspaper resting on the latter.

3,685,692

AUTOMATIC BEVERAGE DISPENSER WITH KEY CONTROL

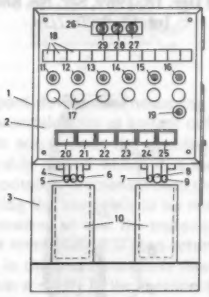
Hansjorg Erne, and Laszlo Halma, both of Zurich, Switzerland, assignors to Derby-Anstalt, Liechtenstein

Filed Aug. 17, 1970, Ser. No. 64,260

Claims priority, application Switzerland, Aug. 15, 1969, 12429/69

Int. Cl. B67d *5/32*

U.S. Cl. 222—23 **11 Claims**



An automatic beverage dispenser operated by keys and provided with means for automatically dispensing a liquid and with means for providing a price indication and recordation for the drink chosen and a recordation of the number of drinks dispensed by each key holder. Means are provided for concurrently dispensing more than one drink without interfering with the dispensing of the other drink. The electronic means including pulse counters are utilized to accomplish the above discribed functions.

3,685,693

DEVICE FOR AUTOMATICALLY OR MANUALLY SPRAYING A PRESSURIZED FLUID

Taisho Iketani, 4-41-6 Nogata, Nakano-ku, Tokyo, Japan

Division of Ser. No. 797,006, Feb. 6, 1969, Pat. No. 3,596,800. This application Dec. 14, 1970, Ser. No. 97,763

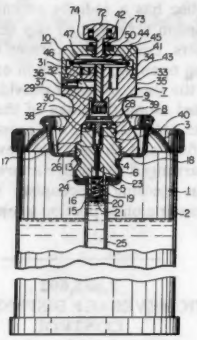
Claims priority, application Japan, Feb. 13, 1968, 43/9084

Int. Cl. B67d *5/08*

U.S. Cl. 222—54 **3 Claims**

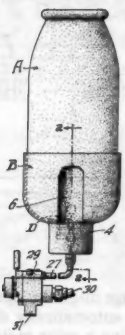
A spraying device comprising a heat-responsive bimetal whose dimension changes with change in temperature and is movable to actuate a valve for opening and closing a passage through which a pressurized fluid is sprayed from a container into the atmosphere and means are provided for manually ac-

tuating the valve through the bimetal. The manual actuating means is effective for spraying the pressurized liquid at a



desired stage even if the bimetal is in such a condition that it can not actuate the valve due to low temperature thereof.

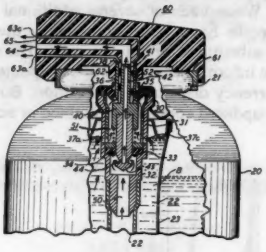
3,685,694
LIQUID DISPENSER PLASTIC BOTTLE AND RECEPTACLE WITH PIERCING UNITS
Frank M. Ianelli, 5 Penwood Road, Livingston, N.J., assignor to Yan-Nell Corporation, West Orange, N.J.
Filed Dec. 18, 1969, Ser. No. 886,141
Int. Cl. B67b 7/24
U.S. Cl. 222—82 3 Claims



For dispensing liquids, a disposable bottle having inherently resilient, easily penetrable plastic walls and a capped mouth that is separably inserted into a rigid receptacle in which are mounted fixed bottle piercing devices that also serve respectively as an outlet for the liquid contents of the bottle and as an inlet for propellant gas under low pressure of the order of 3 pounds, said receptacle having key guide ribs to mate with corresponding recesses in the bottle to permit insertion of bottles of only one and the same design into the receptacle, and preferably, the second-mentioned piercing device being located in one of said ribs to penetrate the bottle wall during such insertion of the bottle.

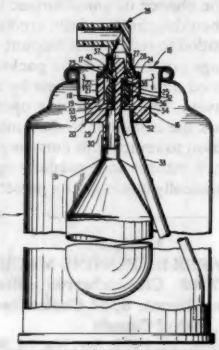
3,685,695
MARBLELIZED PRODUCT AEROSOL DISPENSER
Edward Richard Yuhas, Yonkers, N.Y., assignor to Fluid Chemical Company, Inc., Newark, N.J.
Filed Aug. 28, 1970, Ser. No. 67,763
Int. Cl. B67d 5/56
U.S. Cl. 222—129 5 Claims

A marblelized product aerosol dispenser, adapted to provide separate drawing of separately contained materials



therethrough, to be intermixed and co-dispensed in marblelized product form.

3,685,696
THREE PART, TWO FLUID DISPENSER
Leonard L. Marraffino, 1824 N.W. 36 Court, Oakland Park, Fla.
Filed Oct. 12, 1970, Ser. No. 79,758
Int. Cl. B65d 83/14
U.S. Cl. 222—136 9 Claims

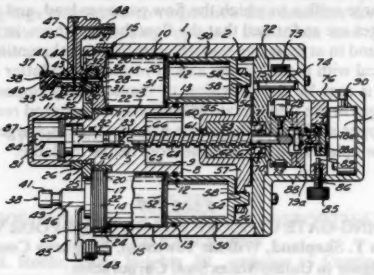


A fluid mixing and dispensing device is provided for a metallic aerosol can containing a metal affecting fluid in a collapsible bag or the like, the bag being of a material unaffected by such fluid. The mixing and dispensing device comprises three basic parts easily manufactured and assembled in the metallic cap. The fluids are mixed and dispensed without contact with the metal cap.

3,685,697
PORTABLE INFUSION PUMP
Joseph H. Caslow, Avon Lake; Melvin F. Huber, Grafton, and John A. Wootten, South Euclid, all of Ohio, assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Jan. 17, 1969, Ser. No. 792,059
Int. Cl. A61m 5/20
U.S. Cl. 222—137 11 Claims

A portable infusion pump for constantly injecting therapeutic fluids into the human body at low positive pressures which has at least one piston for forcing the therapeutic fluid out of

its associated fluid containing bag. The piston is moved by a



constant force spring which spring is controlled by a timing device.

3,685,698

Patent Not Issued For This Number

3,685,699

Patent Not Issued For This Number

3,685,700

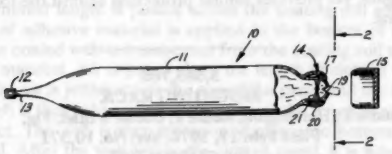
SELF CLOSING TOOTHPASTE TUBE

William A. Martin, 573 Aster, Escondido, Calif.

Filed Aug. 17, 1970, Ser. No. 64,225

Int. Cl. B65d *39/14*

U.S. Cl. 222—213 **1 Claim**



A cream holding tube of molded plastic. This tube includes an automatic valve portion at the forward end which when the rear of the tube is squeezed will open due to cantilevers and a bellows portion. When pressure is released from the body of the tube, the accordion like portion of the valve will cause the opening to close.

3,685,701

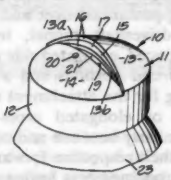
SELF-SEALING DISPENSING CAP

Samuel M. Kollus, 240 16th Place, Costa Mesa, Calif.

Filed April 5, 1971, Ser. No. 130,917

Int. Cl. F16k *7/12*

U.S. Cl. 222—213 **5 Claims**



A dispenser cap composed of a pliable resilient material formed into a tubular member having open ends and a dispensing face covering one of said open ends whereby a first segment of the dispensing face is comprised of a pair of parallelly juxtapositioned elements forming a pocket therein disposed over a portion of the end opening and a second segment of said dispensing face provided with a vent hole passing therethrough near the forward edge thereof, is accommodated in the pocket of said first segment so as to close the remainder of the end opening when said dispensing cap is in the normally closed position. When inwardly converging forces are simultaneously applied to the first and second segments of the dispensing face, the interengaged edges of the first and second segments are outwardly bulged so that the second segment is displaced from the slotted pocket of the first segment, thereby providing an opening in the dispensing face for the expulsion of the contents of the container to which the dispensing cap is attached. When the converging forces are released, the resilient characteristics of the material return the segments to their interengaging normally closed positions.

3,685,702

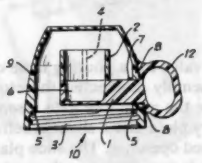
MEASURING DISPENSER

Ronald L. Erwin, Evansville, Ind., assignor to Bernard Gerald Harter, Lynneville, Ind., a part interest

Filed Sept. 28, 1970, Ser. No. 76,060

Int. Cl. G01f *11/10*

U.S. Cl. 222—305 **8 Claims**



A simple compact device for measuring liquids, powders, and granulated materials such as instant coffee. A small container, adapted to screw onto the opening of a larger container, has removably placed within it, a measuring element. In use, the small container is screwed onto the top of the larger container containing the materials to be measured, the combination is then inverted so that the materials enter the small container, and the combination is then returned to an upright position. A baffle in the small container directs the substance to be measured into a cavity in the measuring element. When the measuring element is removed from the small container, the substance is levelled to the proper amount by the edge of the small container.

3,685,703

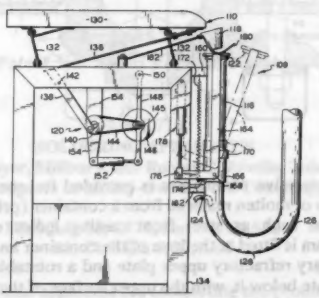
PULSING CONVEYORS

Kenneth M. Allen, and Chester H. Harper, P.O. Box 352, both of Newberg, Oreg.

Filed Oct. 8, 1969, Ser. No. 864,816

Int. Cl. B65d *47/08*

U.S. Cl. 222—373 **2 Claims**



In one embodiment, material metered by a conveyor 10 into the upper portion of hose 16 is dropped periodically into a T-

cup 26 and blown by a nozzle 32 to a second stage, and a floating clamp 18 clamps the hose while the previous material is blown out of the T-cup. In an alternate embodiment, material is metered by a conveyor 110 into a charging tube 116, and, after a cap 122 has sealed the charging tube, air is blown through the charging tube to blow out the material.

3,685,704

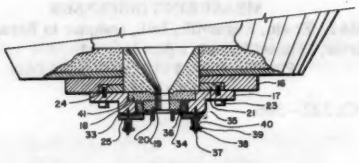
Patent Not Issued For This Number

3,685,705

SLIDING GATE VALVE HAVING SPRING BIASED SLIDE

James W. Cessna, 426 E. Murphy, Connellsville, Pa.

Filed March 24, 1971, Ser. No. 127,533
Int. Cl. B22d *37/00*
U.S. Cl. 222—504 7 Claims



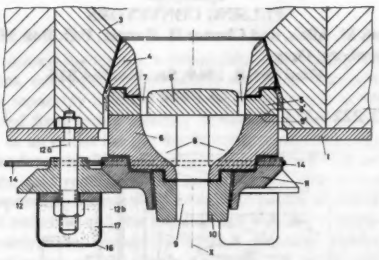
A sliding gate valve for a pouring ladle comprises a bottom plate, a gate assembly connected thereto and an extensible means to operate the gate. The gate assembly includes a stationary refractory plate and a slidable refractory plate having at least two aligned openings. The slide plate is held in a metal slide and tension is maintained in the system by means of adjustable tension plates cooperating with a mounting plate at one end and the metal slide at the other.

3,685,706

ROTARY VALVE FOR METALLURGICAL VESSELS AND THE LIKE

Hans Reinhard Fehling, Zurich, Switzerland, assignor to Didier-Werke A.G., Wiesbaden, Germany

Filed Feb. 20, 1970, Ser. No. 13,110
Claims priority, application Great Britain, Feb. 22, 1969, 9,662/69
Int. Cl. B22d *37/00*
U.S. Cl. 222—531 7 Claims



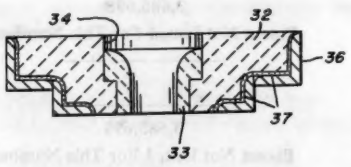
A rotary-valve mechanism is provided for controlling the discharge of molten material from a container (primarily molten metal such as steel from casting ladles etc.) which mechanism is fitted at the base of the container and comprises a stationary refractory upper plate and a rotatable refractory lower plate below it, with the upper surface of the lower plate in contact with the under surface of the upper plate, the two plates being pierced with flow passages which can be brought into and out of register by rotation of the lower plate. The contact surfaces of the two plates are flat and lie in a plane normal to the axis of rotation, the lower plate is provided with an axial discharge orifice to which the flow passages lead, and the flow passages are so formed that the flow through them, in the fully open and in at least one partially position, is substantially symmetrical with regard to the axis of rotation; this latter requirement is met by the provision of diametrically opposed flow passages in the upper plate lead by way of opposed recesses in the upper surface of the lower plate to the discharge orifice. The two plates are replaceable from below the ladle.

3,685,707

SLIDING-GATE CLOSURE FOR BOTTOM-POUR VESSEL

James T. Shapland, Wilkins Township, Allegheny County, Pa., assignor to United States Steel Corporation

Filed May 1, 1970, Ser. No. 33,547
Int. Cl. B22d *37/00*
U.S. Cl. 222—559 2 Claims



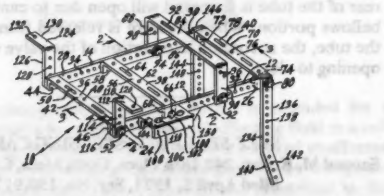
A sliding gate closure member for a bottom-pour hot metal vessel. The gate includes an erosion-resistant nozzle orifice insert positioned in a low-cost refractory and a hard refractory top plate that presents a crack-free surface to the molten metal, thus preventing the formation of fins. An alternative gate construction has a recessed erosion-resistant nozzle orifice insert positioned in a hard refractory that serves as both a back-up material for the orifice insert and as the top surface of the gate, yet provides similar protection against the formation of fins.

3,685,708

MOUNTING RACK

Franklin L. Herrington, Route 1, Doctor's Inlet, Fla.

Filed Feb. 11, 1970, Ser. No. 10,371
Int. Cl. B60r *7/00*
U.S. Cl. 224—42.42 R 9 Claims



A rack for supportingly mounting communication and/or other related equipment within the interior of a motor vehicle with the rack being positioned over and above the vehicle's transmission and driveshaft tunnel, including a pair of generally parallel, spaced, elongated side members having forward and rearward end portions and a plurality of spaced openings therealong for the attachment of equipment to the rack, and a pair of elongated cross-members spanning generally perpendicularly between and connected to the side members adjacent their respective forward and rearward end portions, with the cross-members having a plurality of spaced openings therealong for the attachment of equipment to the rack. The rack further includes a first pair of mounting legs connected to respective side member rearward end portions

and depending downward therefrom and being adapted for attachment to the vehicle floorboard, and a second pair of mounting legs connected to respective side member forward end portions and extending upward therefrom and being adapted for attachment to the vehicle dashboard.

3,685,709

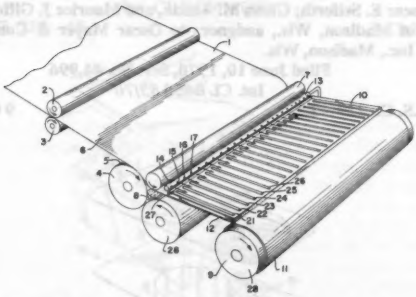
Patent Not Issued For This Number

3,685,710

METHOD AND APPARATUS FOR TRANSPORTING A COATED PAPER WEB

Ronald H. Roulo, Palos Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed April 12, 1971, Ser. No. 133,056
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **4 Claims**



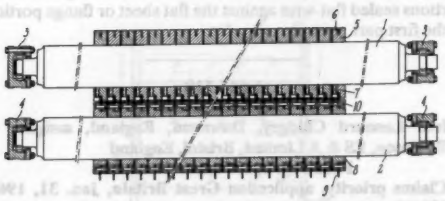
A slotted panel is mounted adjacent a coating roll. A web of predetermined length is passed across the coating roll and a coating of adhesive material is applied to the bottom of the web. The coated web is transported from the coating roll to a winding mandrel. Air is jetted along the length of slots in the panel. The air is jetted across the top of the panel and the top of the web is thus held against the bottom of the panel by venturi effect. The web is then transported along the bottom of the panel. After the web leaves the slotted panel, it is wound into a cylinder or drum on the winding mandrel.

3,685,711

TENSION ADJUSTER FOR SLIT METAL SHEETS

Pierre Andre Gay, La-Tour-En-Jarez, France, assignor to Compagnie des Ateliers et Forges de la Loire, Paris, France

Filed Sept. 8, 1970, Ser. No. 70,067
Int. Cl. B65h *23/18*
U.S. Cl. 226—191 **5 Claims**



This device for adjusting the tension of an initially tensionless sheet consisting of a plurality of slit strips in a sheet-mill, so that the tension applied to said sheet is distributed in a manner substantially proportional to the width of each slit strip, the speeds of said slit strips differing slightly from one another.

ERRATUM

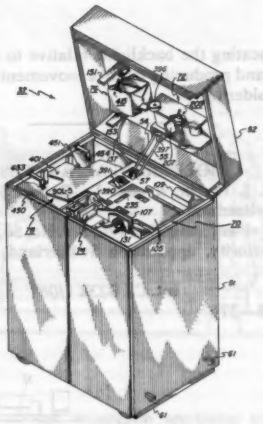
For Class 227—1 see:
Patent No. 3,685,716

3,685,712

STAPLING APPARATUS

Lyman H. Turner, Pittsford; William P. Kukucka, Henrietta, and James E. Summers, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,737
Int. Cl. B27f *7/06*
U.S. Cl. 227—3 **6 Claims**



Stapling apparatus used for stapling copy sheets into booklets produced from documents copied in repeated cycles which includes a tray mechanism having movable side guide members capable of receiving different size sheet material fed along a predetermined path from a processor. The sheet material is stopped by a gate mechanism which is positioned adjacent to the tray mechanism and is operative to move from one position in the sheet path to a second position out of the sheet path in response to discrete electrical signals. The stapling assembly is operative to drive staples one staple at a time into each pile of sheets collected and held in registration by the tray mechanism and gate mechanism in response to electrical signals. A solenoid actuated eject roll mechanism is used to eject the stapled pile of sheets after the gate mechanism has been lifted out of the gate path and move the staple pile to the receiving tray. A control circuit supplies the signals necessary to carry out the program logic of the various components of the stapling apparatus in timed relation.

3,685,713

Patent Not Issued For This Number

3,685,714

SOLDERING APPARATUS

Henry F. Moyer, Millbury, and Robert G. Revells, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 20, 1970, Ser. No. 56,528
Int. Cl. B23k *1/00, 5/00*
U.S. Cl. 228—6 **6 Claims**

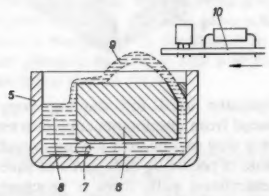
Method of and apparatus for completing the production of electrically heated automobile backlights by automatically soldering flexible, braided wire bus bars to strip electrodes fired onto opposite side margins of the backlight and connect-

ing a network of fine lines through which electrical energy can be conducted. Included are means and procedures for automatically locating the backlights relative to special soldering equipment and producing relative movement therebetween to effect the soldering.

3,685,715
SOLDERING APPARATUS

Louis R. F. J. Perrin, Avenue L. -Robert 53, La Chaux-de-Fonds, Switzerland

Filed June 29, 1970, Ser. No. 50,835
Claims priority, application Switzerland, June 27, 1969, 9866/69
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 7 Claims



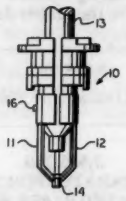
Soldering apparatus including a tin bath and means for melting the tin and maintaining it in motion in a molten state, including a ferromagnetic core in a closed frame, a primary and secondary winding mounted side-by-side thereon with a stirrup piece of low-ohmic resistance, the tin bath being contained in an electrically non-conductive crucible placed between the extremities of the stirrup piece which contains a non-conductive guide forming a nappe of tin extending from one edge of the crucible to the other and situated near the bottom of the tin bath, an electrical contact being established between the extension of the stirrup piece and the edges of this nappe.

3,685,716
RIVET CENTER DETECTOR MECHANISM EMBODYING STRAIN GAUGE

Thomas T. Frankie, Chula Vista, and Larry B. Pascoe, National City, both of Calif., assignors to Rohr Corporation, Chula Vista, Calif.

Filed April 29, 1971, Ser. No. 138,432
Int. Cl. B21j *15/28*
U.S. Cl. 227—1 7 Claims

To determine whether or not a rivet has been delivered to, and is properly centered between a pair of complementary recesses provided in the fingers of an automatic riveting machine, a pair of strain gauges are operatively associated with the rivet holding fingers, the strain gauges being incorporated in opposite sides of a balanced, bridged circuit which is connected to actuate, selectively, a plurality of detectors,

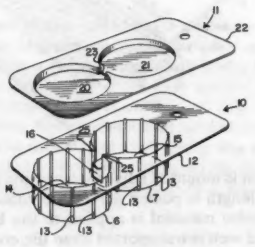


each detector, when actuated, indicating a relative separated condition of the rivet holding fingers.

3,685,717
TWO-COMPARTMENT SEMI-RIGID TRANSPARENT PACKAGE

Oscar E. Seiferth; Glenn M. Austin, and Maurice J. Gifford, all of Madison, Wis., assignors to Oscar Mayer & Company, Inc., Madison, Wis.

Filed June 10, 1970, Ser. No. 44,996
Int. Cl. B65d *85/70*
U.S. Cl. 229—2.5 9 Claims



A multi-compartment package is formed by filling the cup-like cavities of a two-part container with the separate parts being semi-rigid and thermoformed from flexible plastic sheet material. One part of the container is thermoformed from a flat sheet so as to have a flat sheet or flange portion and a plurality of contiguous cup-like container cavities lying wholly within the margins of the flat sheet portion. Side walls of contiguous cavities are integrally joined in a relatively small generally tangential juncture area which is generally vertical with respect to the horizontal flat sheet portion. The second part of the container serves as a closure for the first and is formed of flexible plastic sheet material having shallow plug-like embossments thermoformed therein for plug-like or stopper-like registering engagement in the open ends of the cavities in the first part and with the surrounding flat sheet portions sealed flat-wise against the flat sheet or flange portion of the first part.

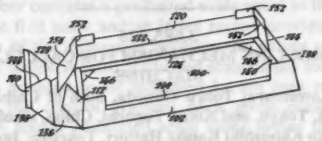
3,685,718
TRAY OR BOX

Alfred Leonard Chidgey, Downend, England, assignor to Robinson, ES & A Limited, Bristol, England

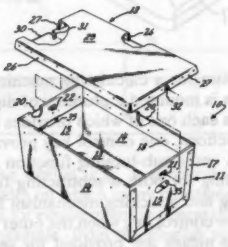
Filed Feb. 2, 1970, Ser. No. 7,640
Claims priority, application Great Britain, Jan. 31, 1969, 5,489/69
Int. Cl. B65d *5/26*
U.S. Cl. 229—34 R 13 Claims

A stackable tray having upstanding projections on its walls and apertures in its bottom, so that a stack of the trays can be stabilized by inter-engagement of the projections and apertures. The projections are provided in at least two corners, and

each projection extends laterally around the corner. The angled form of the projection, particularly when made from foldable sheet material, strengthens it against lateral deformation in a stack of filled trays. When used for containing meals or refreshments at least a part of one wall of each tray may be lower than the other walls.

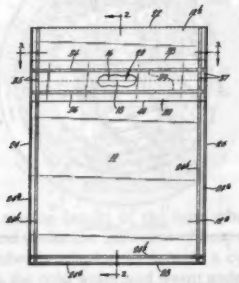


3,685,719
DISTRIBUTION BOX
Joseph Goldman, Minneapolis, Minn., assignor to Logistics Industries Corporation, Philadelphia, Pa.
Filed April 15, 1971, Ser. No. 134,223
Int. Cl. B65d *45/00*
U.S. Cl. 229—45 **8 Claims**



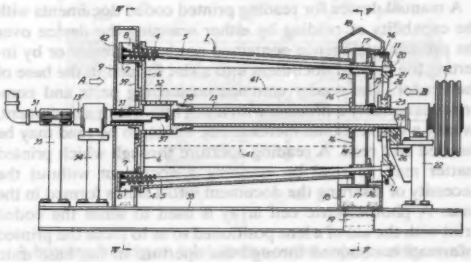
A reusable container having a cover readily attachable to and detachable from the base section. The side walls of the cover overlap the side walls of the base. The container is characterized by an inwardly extending projection on the overlapping side wall portion of the cover, and an outwardly extending projection on the overlapped portion of the base. When the cover is in place these projections mate with openings in the overlapped portion of the base and in the overlapping portion of the cover, respectively. The container is particularly useful in transferring small stock items from a warehouse to a display or retail area and readily lends itself to locking the cover to the base to thereby prevent unauthorized opening or pilferage during transit.

3,685,720
PACKAGE FOR STERILIZED PRODUCTS
Charles E. Brady, P.O. Box 35, Maple Glen, Pa.
Filed July 28, 1970, Ser. No. 58,842
Int. Cl. B65d *33/16*; A61b *19/02*
U.S. Cl. 229—62 **7 Claims**



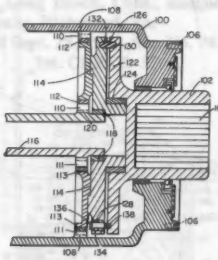
A package for sterilized products comprising a container made of a plastic material, means defining an access opening through which the products may be withdrawn, and a tear strip of an opaque porous material sealed over said access opening in a seal area about the periphery of said access opening, said seal area being transparent to provide indicia of an integral seal.

3,685,721
CENTRIFUGAL SEPARATION APPARATUS FOR SEWAGE
Mashiro Kohama, 533 Nakarato-machi, Minami-ku, Yokohama-shi, Kanagawa-ken, Japan
Filed Oct. 9, 1970, Ser. No. 79,587
Claims priority, application Japan, June 22, 1970, 45/54263
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **4 Claims**



A centrifugal sewage separation apparatus containing a drum with plural solids receiving channels of varying widths, conveying means in the channels, water separation means, and control means for the conveying means.

3,685,722
SOLIDS-LIQUID SEPARATING CENTRIFUGE
George Edwin Nichols, Jr., Norfolk, Mass., assignor to Bird Machine Company, South Walpole, Mass.
Filed May 22, 1969, Ser. No. 826,879
Int. Cl. B04b 9/00
U.S. Cl. 233—23 R **4 Claims**

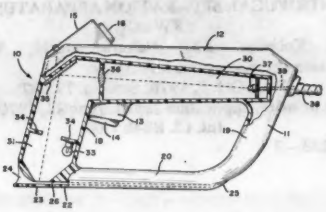


Chatter in continuous centrifuges is avoided or reduced by connecting together parts of the assembly of bowl, conveyor and differential gearing in drive-driven relation by resilient, flexible connection means which has a substantially lower spring rate than the other parts of the assembly and which is capable of withstanding without slip or fracture torque greater than the torque on the conveyor produced at maximum rated loading.

3,685,723
PHOTOELECTRIC MANUAL READER FOR PRINTED CODED TAGS

Robert M. Berler, 3 Bruce Lane, Westport, Conn.

Filed May 21, 1971, Ser. No. 145,698
Int. Cl. G06k 7/10
U.S. Cl. 235—61.11 E 5 Claims

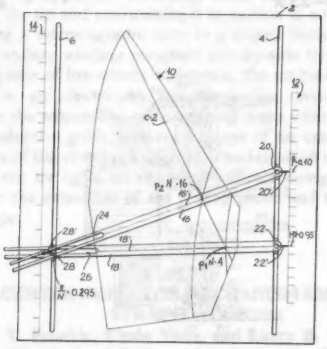


A manual device for reading printed coded documents with the capability of reading by either scanning the device over the printed intelligence contained on the document or by inserting the printed document into a slot formed in the base of the reader. The reader contains no moving parts and comprises essentially a housing with a slot into which a document, usually a conventional merchandise ticket, to be read may be inserted and read. A reading aperture through which printed matter may be read by scanning a document without the necessity of inserting the document into a slot is formed in the base. A photoelectric cell array is used to sense the coded print with the aid of a lens positioned so as to focus the printed information obtained through the aperture in the base onto the photocell array. A light source whose direct light is shielded from the photocells is positioned contiguous to the aperture to shed light on the printed matter to be read.

3,685,724
DEVICE FOR THE GRAPHICAL SOLUTION OF SIMULTANEOUS EQUATIONS

Shaul Ladany, Ramat Efal, Rechov Haelah 6, Doar Ramat Gan, Israel

Filed May 20, 1971, Ser. No. 145,391
Int. Cl. G06c 3/00
U.S. Cl. 235—61 B 8 Claims

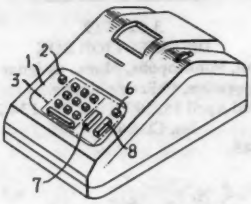


A device for the graphical solution of the simultaneous equations $A=f(D, C, K)$, which equations can be represented by nomographs, e.g., Larson's Nomograph, having two spaced vertical axes bounding two families of curves. The device comprises a first straight line defining means (e.g., a transparent stick) having one end thereof presettable along the first vertical axis, a second straight line defining means (e.g., a second transparent stick) having one end thereof also presettable along the first vertical axis, their other ends intersecting at a common point on the second vertical axis, and means (e.g., a pin) disposed at the common point and movable along the second vertical axis.

3,685,725
CONTROLLING MECHANISM FOR CALCULATING MACHINE

Toshiki Kawamura; Tohru Ohneda, both of Chiba; Yasuaki Nomura, Tokyo, and Kikuo Taguchi, Chiba, all of Japan, assignors to Kabushiki Kaisha Hattori, Tokeiten, Japan

Filed Dec. 30, 1968, Ser. No. 787,762
Int. Cl. G06c 21/04
U.S. Cl. 235—62 F 7 Claims

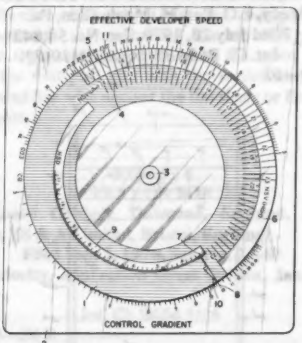


Control mechanism for a calculating machine including a keyboard on which is mounted a plurality of digit keys and a pair of control keys each one of which provides for two calculating machine functions, one control key providing for both an adding function and a sub-totaling function and the other control key providing for both a subtracting function and a totaling functioning and a locking mechanism for preventing the actuation of one control key when the other control key is actuated. Selecting means are provided for selecting which one of the two calculating machine functions will be performed in response to actuation of each control key and the selecting means operates to select one or the other machine function depending upon whether the control key is actuated before or after actuation of any of the digit keys.

3,685,726
PROCESSOR CONTROL COMPUTER

Koji Wada, Takatsuki, and Akira Ishida, Kyoto, both of Japan, assignors to Kabushiki-Kaisha Shashin Kagaku Kamigyoku, Kyoto, Japan

Filed May 12, 1970, Ser. No. 36,657
Claims priority, application Japan, May 14, 1969, 44/43663
Int. Cl. G06c 3/00
U.S. Cl. 235—64.7 5 Claims



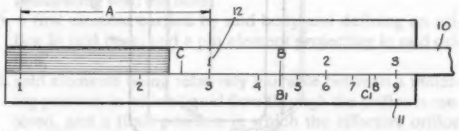
A processor control computer used to control the development of lith type films with respect to its quality, rate of development, contrast, etc. The processor control computer

comprises a first scale member and a second scale member capable of relative movement. A first graduated scale is on the first scale member and contains the numerical values corresponding to a control strip for development. The second scale member contains a graduated scale equal to the graduations of the first scale and an index means providing for the calculation of the difference between the values of the first and second scales. A third graduated scale on the second scale member is adapted to be indicated by the inex means and represents the control gradient of a given photosensitive material. A fourth graduated scale along either the first or second scale represents the effective speed of a given developer.

3,685,727
CALCULATING DEVICE

Kenneth Joseph Alban Brookes, East Barnet, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,401
Claims priority, application Great Britain, Oct. 15, 1969, 53,578/69
Int. Cl. G06g *1/02*; G06c *3/00*
U.S. Cl. 235—70 R **7 Claims**

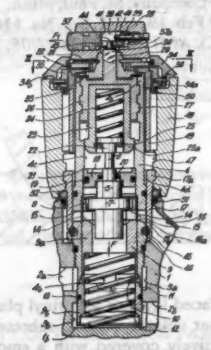


A calculating device, e.g., a slide rule, with cooperating logarithmic scales on which many constants are identified and readily located for employment in operations such as unit conversions, for example, from the English system to the metric system. A pair of special indices, one member thereof on each of the cooperating scales, is provided for each constant and one member of the pair is located arbitrarily on its scale. The arbitrarily located special indices may be conveniently arranged in groups, each group appropriate to a particular class of conversions, i.e., area, volume, etc.

3,685,728
THERMOSTATIC MIXING FAUCET

Yves Chapou, 21, Cours Marigny, Vincennes, France

Filed Nov. 4, 1970, Ser. No. 86,867
Claims priority, application France, Nov. 15, 1969, 6939350
Int. Cl. G05d *11/16*
U.S. Cl. 236—12 **5 Claims**

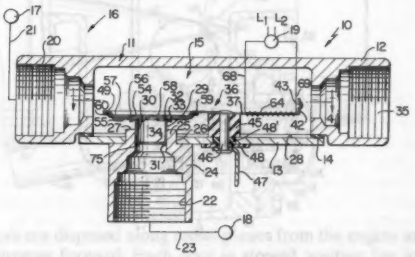


Thermostatic mixing faucet of the type wherein a capsule adapted to expand under the influence of heat and disposed in the mixing chamber is adapted to actuate a cylindrical spool valve controlling the cold water and warm water inlet ports by reacting against a fixed but displaceable bearing member of which the change of position permits of adjusting the temperature of the mixed water. The outlet spout of said faucet is controlled by a second cylindrical spool valve concentric to the first one and of which the axial movements are controlled by means of a handwheel rotatably mounted to the faucet body, the adjustment of the mixed water temperature being controlled by a rotary knob provided at one end of said body and adapted, when rotated, to produce an axial movement of said bearing member engaged by said expansible capsule.

3,685,729
FUEL CONTROL SYSTEM AND VALVE CONSTUCTION THEREFOR OR THE LIKE

Denis G. Wolfe, Greensburg, and Gerald H. Eicher, Alverton, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 20, 1970, Ser. No. 91,438
Int. Cl. F03g *7/06*; F16k *31/02*
U.S. Cl. 236—15 A **18 Claims**

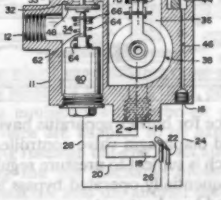


A housing having an inlet and an outlet separated by a valve seat and a movable valve member for controlling the valve seat. The valve member has a plural leg bimetal member defining two legs joined together at adjacent ends thereof by a yoke portion, the valve member having a valve seating part secured to the free end of one of the legs and being engageable with the valve seat. The other of the legs has the free end thereof secured to the housing and carries a heating device for warping the other leg to cause the bimetal member to move the valve seating part thereof away from the valve seat. The one leg of the bimetal member is normally bent out of the plane of the other leg whereby the natural bias of the one leg engages the valve seating part against the valve seat to seal close the same when the heating device is not heating the other leg.

3,685,730
THERMOSTATIC FLOW CONTROL DEVICE

Jay R. Katchka, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 28, 1970, Ser. No. 76,120
Int. Cl. F22b *37/42*
U.S. Cl. 236—21 **18 Claims**



A thermostatic flow control device including a safety valve and a thermostatic valve controlling flow between an inlet and

main and pilot outlets in a casing, operator levers providing permissive control of the safety valve and the thermostatic valve, and a selector stem controlling movement of the levers to provide off, pilot and on conditions for the control device.

3,685,731

LARGE CAPACITY STEAM TRAP

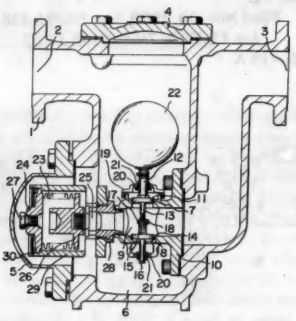
Katsuji Fujiwara, 191, Nishitani Hiraoka-cho, Kakogawa-shi, Hyogo-ken, Japan

Filed Dec. 4, 1970, Ser. No. 95,235

Claims priority, application Japan, Dec. 6, 1969, 44/98119

Int. Cl. F16t 1/10

U.S. Cl. 236—53 **4 Claims**



This invention relates to an improvement of a large capacity steam trap, wherein certain disadvantages of a composite valve mechanism, which is opened and closed by utilizing the buoyancy of a float or the like, are eliminated by the addition of a bellows mechanism or the like, to obtain a steam trap which is accurate in operation, low in cost and easy to handle and maintain, as well as being capable of discharging a large quantity of condensed water.

3,685,732

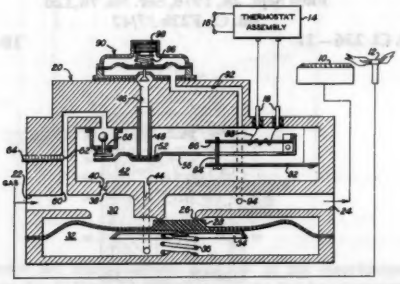
THERMOSTATIC CONTROL DEVICE WITH HEAT MOTOR OPERATED STEP OPEN DIAPHRAGM VALVE

Lauren D. Haskins, Long Beach, and Samuel T. Kelly, Torrance, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed June 3, 1970, Ser. No. 43,013

Int. Cl. G05d 23/185; G05b 11/50

U.S. Cl. 236—68 R **11 Claims**



A control device for burner apparatus having a differential pressure operated diaphragm valve controlled by an internal bleed system which is subject to pressure regulation and to on-off control by sequentially operated bypass and bleed valves which are actuated by a heat motor operator. Initial actuation of the heat motor operator opens the bleed valve to provide a step input at a reduced rate under pressure regulation to the main burner for assuring good ignition without "roll-out." Subsequent control of the bypass valve enables flow modulation, and full input is delayed until the bypass valve is fully closed.

3,685,733

CIRCULATING WATER HEATER

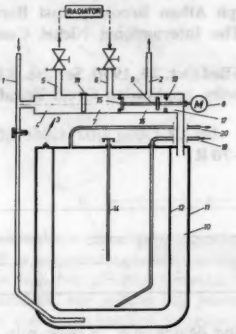
Carouge Frithjof, Solingen, Germany, assignor to Joh. Vaillant KG., Remscheid, Germany

Filed Jan. 11, 1971, Ser. No. 105,285

Claims priority, application Austria, Jan. 28, 1970, A 798/70 798/70

Int. Cl. F24d 3/08

U.S. Cl. 237—19 **4 Claims**



A water heating system has a hot water flow to a radiator branch and a domestic water heating branch. The return lines from these two branches flow to the main return line through a motor operated valve which comprises two coaxial valve seats, and a valve closure for each valve seat. The motor is connected to the closures through a common valve rod. The two closures are between the two valve seats. The main return line connects to the body between the two seats. The branch return lines each connect on the opposite side of a respective valve seat.

3,685,734

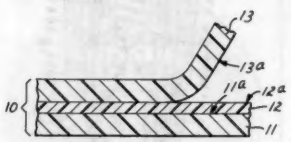
CONTROLLED FRAGRANCE RELEASE DEVICE

Walter J. Paciorek, Woodbury, and Randolph Norton, Lake Elmo, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 19, 1971, Ser. No. 116,951

Int. Cl. A61l 9/04; B32b 27/08, 27/18

U.S. Cl. 239—56 **12 Claims**

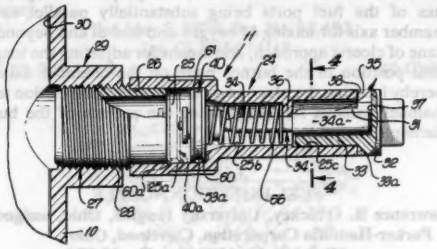


A smooth-surfaced layer of soft vinyl plastisol containing a fragrance or other volatile organic substance is coated on a base and protectively covered with a smooth flexible sheet having low vapor transmission. The assembly is ordinarily substantially odor-free, but when the cover sheet is removed, the fragrance is immediately detectable and is gradually released. Replacing the cover sheet, which displays almost molecular adhesion for the smooth exposed surfaces of the plastisol, immediately stops the release of the fragrance.

3,685,735
IRRIGATING APPARATUS

Harry C. Foster, Northridge, Calif., assignor to Hersey Products, Inc., Dedham, Mass.

Filed Nov. 2, 1970, Ser. No. 86,128
Int. Cl. B05b *15/02*; F23d *11/34*, *13/28*
U.S. Cl. 239—109 13 Claims



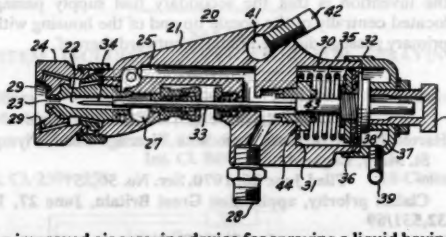
The invention concerns an irrigating system and emitters to communicate with a liquid supply line in the system, each emitter comprising:

a. an emitter body having a bore, an inlet and an outlet communicating with the bore,
b. a first element carried by said body and defining an orifice in said bore, and a pin element projecting in said orifice,
c. said elements being relatively movable between a metering position in which liquid flow through the orifice is metered, and a flush position in which the effective orifice area is substantially increased to pass particulate material to said outlet,
d. there being structure transmitting yieldable force in a direction to counteract the pressure of said liquid and urging at least one of the elements toward said flush position.

3,685,736
SPRAYING DEVICE

Fredrick Henry Diegelman, Whiteford, Md., assignor to Bethlehem Steel Corporation

Filed Dec. 16, 1970, Ser. No. 98,651
Int. Cl. B05b *15/02*
U.S. Cl. 239—118 4 Claims



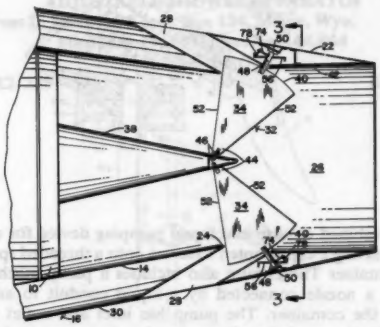
An improved air spraying device for spraying a liquid having self cleaning means including a stem adapted to move into and out of the spray outlet without interrupting the continuous flow of air and liquid, the stem being normally biased out of said outlet.

3,685,737
THRUST CONTROLLING APPARATUS

Christopher C. Ronald, Imperial Beach, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Sept. 11, 1970, Ser. No. 71,527
Int. Cl. B63h *11/10*; B64c *15/00*
U.S. Cl. 239—265.19 19 Claims

Apparatus comprises elongate shroud surrounding all or part of jet engine. Aft portion of shroud extends rearward beyond exit end of jet nozzle to surround and control exhaust gas stream. Continuous peripheral passage or several discrete passages through shroud wall aft of nozzle exit provide flow paths for entry of free stream air to constitute aft portion of shroud an ejector barrel and for exit of exhaust gas stream to constitute aft portion of shroud a thrust reverser. Blocker doors, generally triangular in planform, are circumferentially spaced around interior of barrel with their bases pivotally mounted in the barrel and their apices pivotally mounted in a common mounting at the longitudinal axis of the shroud and forward of the base mountings so that the axes of rotation of

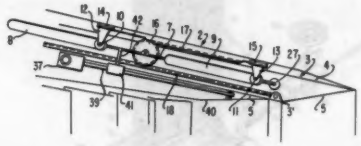


the doors are disposed along radial planes from the engine axis and converge forward. Each door in stowed position lies in a plane containing the longitudinal axis of the shroud and rotates approximately 90° to fully deployed position in a transverse plane wherein the doors form a forwardly convex cone to block axial rearward flow and direct engine gases out through passages. Control ring is mounted in barrel in plane of base mounting of the doors for limited rotative movement of ring about engine axis, and is link-connected to doors to rotate them about their axes. Actuator in barrel rotates control ring and can retain ring in any intermediate position for modulated thrust reversal.

3,685,738
THRUST NOZZLE WHOSE GAS DISCHARGE CROSS-SECTION IS ADAPTED TO BE ADJUSTED BY MEANS OF ADJUSTING FLAPS

Heinrich Leibach, Moosstrasse 24, 8031 Puchheim; Ludwig Schweikl, Kolpingstrasse 5, 8052 Moosburg, and Paul Lottes, Luisenstrasse 8, 859 Marktredwitz, all of Germany

Filed Dec. 22, 1969, Ser. No. 887,238
Int. Cl. B63h *11/10*; B64c *15/00*
U.S. Cl. 239—265.39 44 Claims



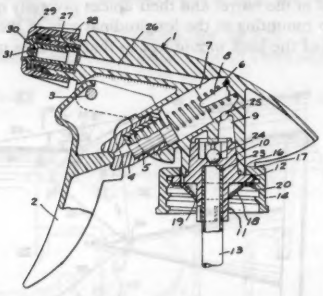
A thrust nozzle whose gas discharge cross-section is adapted to be changed by means of adjusting flaps, particularly for aircrafts which are equipped with turbo-jet propulsion units, whereby nozzle flaps are adapted to be extended out of the uniformly tapering fuselage tail-end of an aircraft for the purpose of reducing the gas discharge cross-section and are adapted to be retracted into the aircraft tail-end for the purpose of increasing the gas discharge aperture; the flaps form in the fully extended position an extension of the tail-end of the fuselage.

3,685,739

LIQUID DISPENSING APPARATUS

Vance R. Vanier, Miami Lakes, Fla., assignor to The AFA Corporation of Florida, Miami Lakes, Fla.

Filed Aug. 7, 1970, Ser. No. 61,936
Int. Cl. B05b 7/32
U.S. Cl. 239—333 **20 Claims**



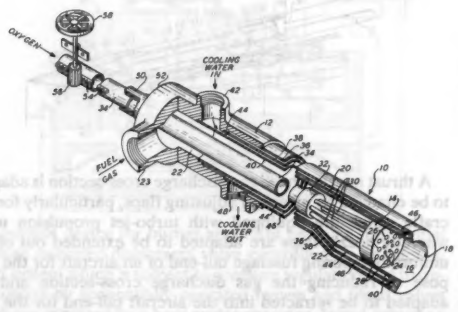
A combined closure and liquid pumping device for a container having a cap adapted to screw onto a threaded spout of the container The closure also includes a pump mechanism having a nozzle connected by a liquid conduit to an inlet within the container. The pump has inlet and outlet check valves in the conduit and a pump chamber connected to the conduit between the valves. The outlet valve is located between the pump and the outlet orifice of the nozzle inwardly or upstream from the nozzle orifice. The nozzle is adjustable on the body of the device and in one adjusted position positively holds the outlet valve closed so that the outlet valve closes off the conduit for disabling liquid pumping operation of the pump and also serves as a static seal to prevent leakage from the container via the liquid conduit. In another adjusted position of the nozzle the outlet valve is free to function as a check valve in the conduit which closes the conduit during the intake stroke of the pump and opens during the ejection stroke of the pump to pass liquid from the conduit through said orifice. The pumping device is also provided with a check valve which permits admission of air through a vent into the container above the liquid during the intake stroke of the pump but closes the vent at all other times to prevent leakage of the liquid from the container through the vent.

3,685,740

ROCKET BURNER WITH FLAME PATTERN CONTROL

Thomas L. Shepherd, Essex Fells, N.J., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,171
Int. Cl. B05b 7/10
U.S. Cl. 239—400 **15 Claims**



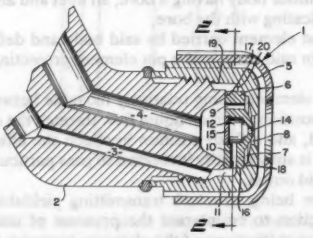
An oxygen-fuel burner of the rocker burner type comprising a cylindrical combustion chamber having an open discharge end and a burner plate with separate oxygen and fuel ports constituting the opposite end of the chamber; the projected longitudinal axes of the oxygen ports extending in converging directions towards the longitudinal axis of the chamber but in off-set, non-intersecting relation thereto, so that points on the respective axis that most closely approach the chamber axis define a transversely positioned plane between the burner plate and the chamber exhaust; the projected longitudinal axes of the fuel ports being substantially parallel to the chamber axis for mixing of oxygen and fuel at and beyond the plane of closest approach, and means for adjusting the longitudinal position of the burner plate on the chamber axis and thereby locating the plane of closet approach in relation to the chamber exhaust for determining the pattern of the burner discharge flames.

3,685,741

FUEL INJECTION NOZZLE

Lawrence B. O'Sickey, University Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed July 16, 1970, Ser. No. 55,376
Int. Cl. B05b 7/12
U.S. Cl. 239—406 **1 Claim**



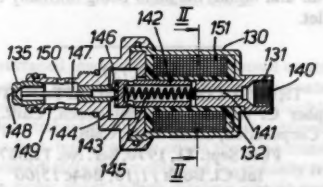
A dual orifice fuel injection nozzle for gas turbines and the like characterized in that a unitary primary nozzle body clamped between the secondary nozzle body and the nozzle housing provides a primary swirl passage and a secondary swirl passage leading respectively to a primary swirl chamber and primary discharge orifice and to a secondary swirl chamber and annular secondary discharge orifice, the secondary orifice and chamber being defined between said primary and secondary bodies with the latter being screw threaded onto the nozzle housing. A further characterizing feature of the invention is that the secondary fuel supply passage is located centrally of the nozzle tip end of the housing with the primary passage disposed radially outward thereof.

3,685,742

FUEL INJECTION NOZZLES

Harold Ernest Jackson, Panorama Vicarage Road, Plympton, St. Mary, England

Filed June 26, 1970, Ser. No. 50,257
Claims priority, application Great Britain, June 27, 1969, 32,531/69
Int. Cl. B05b 7/12
U.S. Cl. 239—407 **10 Claims**



A fuel injector nozzle including an electromagnetically operable valve which controls fuel flow along a fuel tube to an

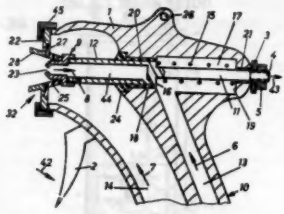
outlet. The fuel tube forms a flow restrictor and can be removed from and replaced in the nozzle without disturbing any part of the valve.

3,685,743

SPRAY GUNS

Martin Sebastiani, Owinger Strasse 1, Ueberlingen 7770, Germany

Filed May 7, 1970, Ser. No. 35,492
Int. Cl. F23d 13/38
U.S. Cl. 239—415 10 Claims



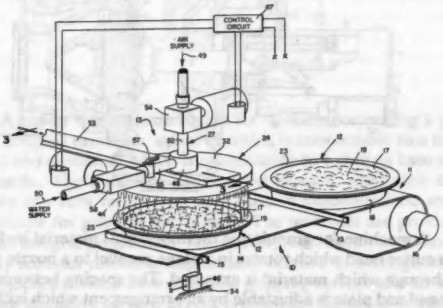
A clog-free spray device for viscous materials is disclosed with a housing providing separate supply chambers for a viscous material and the fluid carrier therefor. A tubular discharge opening communicates directly with the supply chamber for the viscous material and has an inwardly directed resilient tubular wall. A reciprocatable plunger is provided with a hollow portion, one end of which has an inlet opening for the fluid carrier and the other end has an outlet nozzle with a cylindrical outer portion which is engageable in sliding sealed relationship within the tubular wall of the discharge opening to form a peripheral valve closing the viscous material supply chamber. As the plunger is moved toward the fluid carrier supply chamber its inlet communicates with that chamber and the nozzle conveys the fluid carrier alone out the discharge opening. Further movement of the plunger opens the peripheral valve about the nozzle and the viscous material enters the tubular discharge opening from all sides to intermix intimately with the carrier fluid. Reversing the plunger causes the tubular wall to wipe the cylindrical portion of the nozzle clean of viscous material to prevent clogging. In one embodiment an edge of the tubular wall seats in its closed position against a flange on the nozzle to provide both radial and axial sealing surfaces.

3,685,744

SYSTEM INCLUDING APPLICATOR FOR SPRAYING LIQUIDS

William F. Ludy, Jr., Stowe, Pa., assignor to Progressive Machine Company, Inc., Spring City, Pa.

Filed Jan. 18, 1971, Ser. No. 125,781
Int. Cl. B05b 1/14
U.S. Cl. 239—552 10 Claims



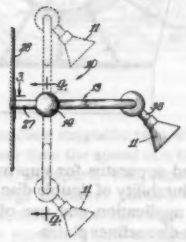
An applicator applies a downward annular spray of water that impinges upon the annular upwardly facing surface at the peripheral edge of a bottom crust of an unbaked pie shell to prepare such surface for being sealed to a top crust by crimping. The applicator has a housing with a circular peripheral flange on one surface defining a circular recess into which a spray disc fits. The disc has a grooved surface in contact with the housing for conveying a pressurized mixture of air and water to the peripheral edge of the disc which is provided with transverse X-shaped slots that function as nozzles spraying the air-water mixture in an annular pattern.

3,685,745

ADJUSTABLE SHOWER APPARATUS

Andreas D. Peschcke-Koedt, Box 134, Moose, Wyo.

Filed May 19, 1971, Ser. No. 144,864
Int. Cl. B05b 1/30
U.S. Cl. 239—587 13 Claims



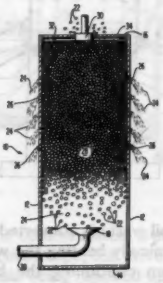
Improved apparatus for mounting a device, such as a shower head, to extend at a preselected angle to the horizontal in all positions of vertical adjustment thereof. The apparatus includes an elongated element having one end swingable about a mounting adapted to be fixedly positioned such as to a wall. The shower head is connected to the other end and means are provided for maintaining a desired angular disposition of the shower head notwithstanding a swinging of the elongated element about the first end.

3,685,746

DISCHARGE DEVICE FOR REMOVING COMPACTED BED OF PARTICLES

Herbert F. Wiegandt, Cornell University, Ithaca, N.Y.

Filed Aug. 27, 1969, Ser. No. 853,365
Int. Cl. B02c 18/10, 18/22
U.S. Cl. 241—3 11 Claims



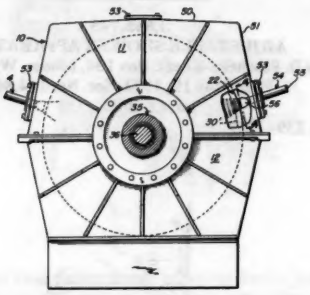
A device for controlling a bed of compacting solids. The consolidating bed is propelled through a tubular passage by a concurrent flow of liquid; and an inturned lip, near the exit of the passage, constrains egress of the bed. A cutter sweeping zone proximate the lip comminutes advancing portions of the bed approaching the lip.

3,685,747

DOUBLE REVOLVING DISC REFINERS AND METHODS OF THEIR USE

Anton J. Horstman, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Filed Oct. 5, 1970, Ser. No. 77,889
Int. Cl. B02c 7/06
U.S. Cl. 241—15 26 Claims



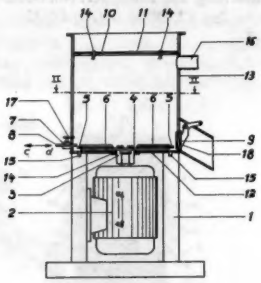
A method and apparatus for improving the performance, capability and durability of double disc refiners characterized by the unique application and use of shower waste at the periphery of the disc refiner plates.

3,685,748

METHOD AND DEVICE FOR CONVERTING THERMOPLASTIC FOIL WASTE TO A FLOWABLE GRANULAR MATERIAL

Erich Beck, 652 Worms-Weinsheim, An-der Ziegelhatte, and Heinrich Schulz, Vorder Kinzingbrucke 14, 645 Hanau, both of Germany

Division of Ser. No. 665,152, Sept. 1, 1967, Pat. No. 3,510,067. This application May 22, 1969, Ser. No. 841,662
Claims priority, application Germany, Sept. 2, 1966, F 50106; Aug. 11, 1967, F 53207
Int. Cl. B02c 13/18, 13/286, 18/44
U.S. Cl. 241—41 1 Claim



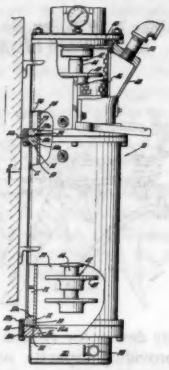
Thermoplastic foil waste is converted to re-usable granular material by mechanically beating the waste to thereby comminute it, and then continuing the beating operation for producing frictional heat which causes densification and agglomeration of the particles. The resulting granules are cooled while the beating motion is continued, thus permitting the granular material to be issued without sticking. A correspondingly controllable single beater unit equipped for timed supply of coolant is employed to perform the process in a continuous sequence of operations.

3,685,749

SANDMILL VESSEL

Donald J. Brown, La Crescenta, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Filed March 22, 1971, Ser. No. 126,837
Int. Cl. B02c 17/16
U.S. Cl. 241—65 4 Claims



A vessel having an outer cylindrical jacket with flanges formed on its ends that position an inner liner which defines a processing chamber. The flanges are bolted to connecting rings which cooperate with the ends of the liner to support it and seal the processing chamber from the space between the jacket and the liner, while permitting easy replacement of the liner.

3,685,750

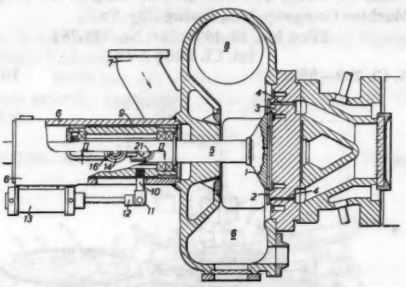
Patent Not Issued For This Number

3,685,751

APPARATUS FOR GRANULATING THERMOPLASTIC MATERIALS

Dietmar Anders, Hannover, Germany, assignor to Berstorff, Hermann Maschinenbau GmbH, Hannover-Kleefeld, Germany

Filed Dec. 15, 1970, Ser. No. 98,352
Claims priority, application Germany, Dec. 23, 1969, P 19 64 413.4
Int. Cl. B02c 7/14
U.S. Cl. 241—256 9 Claims



A machine for granulating thermoplastics material includes a cutter head which rotates in a plane parallel to a nozzle plate through which material is extruded. The spacing between the head and plate is adjustable by an arrangement which includes a bush surrounding a spindle carrying the cutter head. An adjustable stop on the bush co-operates with a counter-stop on a

differential screw device in order to adjust the spacing. The bush is biased to prevent backlash in the differential screw device.

3,685,752

METHOD AND APPARATUS FOR PROCESSING A THREAD ON A DRAW-SPIN-WINDING MACHINE

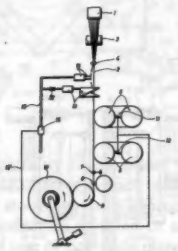
Armin Wirz, Deitlikon, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Oct. 21, 1969, Ser. No. 870,522

Claims priority, application Switzerland, Nov. 6, 1968, 16659/68

Int. Cl. B65h *63/00*

U.S. Cl. 242—36 14 Claims



The cutting means and suction means are arranged above the detection means so as to, first, draw in the thread against the suction means and to, second, sever the thread while the free ends is then drawn into the suction means. Both the cutting means and the suction means are pneumatically activated in response to the detection of a disturbance in the thread path by the detecting means.

3,685,753

POWER TRANSMISSION SOCKET FOR BOBBINS

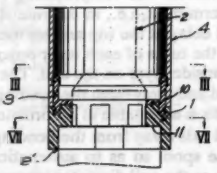
Isao Sato, 2-17, 2-Chome Tomigaoka, Nara Prefecture, Japan

Filed Sept. 23, 1969, Ser. No. 860,265

Claims priority, application Japan, Sept. 24, 1968, 43/68856

Int. Cl. B65h *54/40, 79/00*

U.S. Cl. 242—46.21 3 Claims



A power transmission socket for bobbins comprising a pair of coupled members, a first of which is connectable to a bobbin and second of which is connectable to a driving base of a spindle. The members are coupled to each other such that they can turn relative to each other a predetermined small distance for gripping the spindle. The members are provided with integral projections, respectively, and form complementary recesses rotatably displaceable relative to corresponding projections which have a spindle gripping surface and an outward engaging surface urging projections displaced inwardly as well as in the direction opposite to that of the rotation of the spindle causing the gripping surface to grip the spindle.

3,685,754

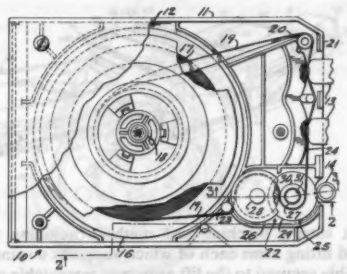
TAPE CARTRIDGE

Ralph E. Cousino, Toledo, Ohio, assignor to Orrtronics, Inc., Perrysburg, Ohio

Filed Feb. 27, 1969, Ser. No. 802,981

Int. Cl. B65h *17/48*

U.S. Cl. 242—55.19 A 2 Claims



A cartridge for an endless magnetic tape wherein the tape is driven at a speed slower than the speed of a tape drive capstan in a cooperating tape transport. The capstan engages and drives at least one large diameter portion of a drive wheel which is rotatably mounted in the cartridge. The drive wheel has a small diameter portion which engages and drives the endless tape to pull the tape past at least one tracking head. An idler wheel urges the tape against the drive wheel to maintain a positive tape drive.

3,685,755

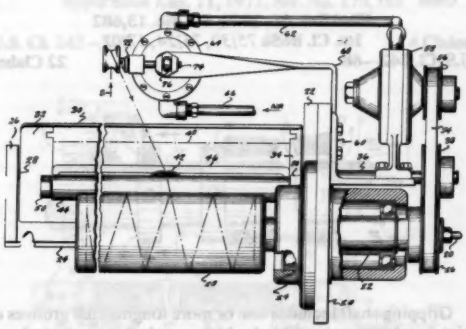
WINDING MACHINE DRIVE AND TENSION CONTROL SYSTEM

Charles S. W. King, and John H. Pierce, both of Charlotte, N.C., assignors to R. H. Bouligny Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 761,779, Sept. 23, 1968, abandoned. This application Nov. 10, 1970, Ser. No. 88,260

Int. Cl. B65h *59/38*

U.S. Cl. 242—45 11 Claims



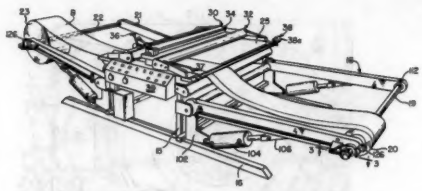
A drive and tension control system is provided for a winding machine of the precision type, the drive being fluid-actuated and the actuating fluid being supplied under a modulating influence controlled from the sensing of take-up tension in a manner that maintains such tension substantially constant by compensative regulation of spindle speed. The modulating influence is also specially arranged to act selectively so that the spindle assumes an idling speed whenever an end break releases take-up tension, and so that it stalls harmlessly whenever the end being wound is held against winding.

3,685,756

METHOD AND APPARATUS FOR SLITTING BELT

Norbert M. Marx, Ellensburg, and Carl G. Lichtenwalter, Yakima, both of Wash., assignors to Chain Gear, Incorporated, Seattle, Wash.

Filed Feb. 26, 1969, Ser. No. 802,573
Int. Cl. B65h *35/02, 19/30*
U.S. Cl. 242—56.2 17 Claims



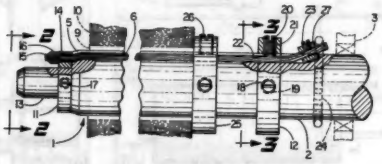
Belt slitting machine and method including two sets of spaced lifting arms each of which supports a spindle which is rotatably secured to the lift arms by a retractable pin nested in an end of each spindle. The lift arms are hydraulically positionable both vertically and laterally. The machine includes a set of drive and pressure rollers for pushing the belt into a knife which is pivotally mounted for piercing the belt from above. A second set of drive and pressure rollers are located downstream of the knife to pull the belt as it is being pushed. To apply tension, the drive roller of the tension set is of a diameter slightly larger than the drive roller of the pusher set. The spindles are rotated by hydraulic motors which are in circuit with the hydraulic motor for the drive rollers and with suitable valves so that the rotation of each spindle is controlled independently of the drive rollers to assure tensioning of the belt regardless of the speed of the drive rollers and regardless of the direction of rotation. Adjustable guides are spring biased in position to guide a cut-out portion of a belt and are automatically disengaged at the end of the cut-out portion. The method involves feeding the belt, piercing, slitting, guiding, and positioning steps.

3,685,757

GRIPPING SHAFT

Richard M. Fedor, 2662 Shaker Road, Cleveland Heights, Ohio

Filed Feb. 24, 1970, Ser. No. 13,682
Int. Cl. B65h *75/30, 75/24, 17/02*
U.S. Cl. 242—68 22 Claims



Gripping shaft includes one or more longitudinal grooves or slots in which are contained cables or rods that are forced outwardly during rotation of the shaft into wedging engagement between the shaft and a hollow core or coil of stock material inserted thereover for positively gripping the same. An adjustable stop may be provided on the shaft for accommodating different lengths of coils, and means are also provided for adjusting the slack in the cables to suit operating conditions. When rods are used as the gripping elements, additional means may be provided for urging the rods out of gripping engagement with the core or coil when the shaft is stopped so that the rods will not interfere with loading and unloading of the stock material.

3,685,758

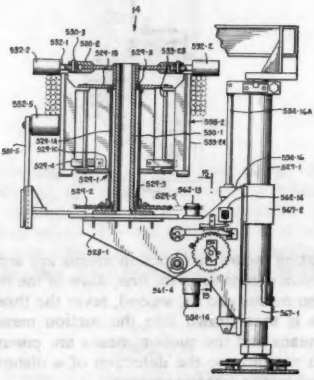
Patent Not Issued For This Number

3,685,759

APPARATUS FOR COILING A STRIP OF MATERIAL

Albert C. Adams, 5-11 - 161st St., Flushing, N.Y.; John J. Crosby, 118-15 - 226th St., Cambria Heights, N.Y., and George W. Graf, 131-34 - 221st St., Springfield Gardens, N.Y.

Division of Ser. No. 706,850, Feb. 20, 1968, Pat. No. 3,566,654. This application May 4, 1970, Ser. No. 34,639
Int. Cl. B21c *47/04*
U.S. Cl. 242—78 4 Claims

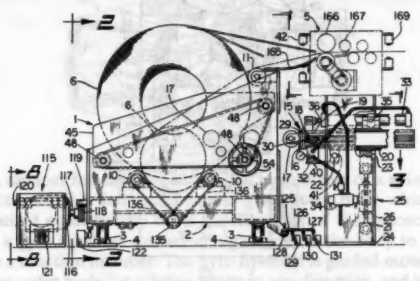


Apparatus for forming a uniform coil of strip material such as tubing. A bending station bends the strip (supplied continuously thereto) to a desired radius. A plurality of relatively small diameter bending rolls are employed midway between and on the opposite side of the strip from two bending rolls of larger diameter. The strip passes from the bending rolls to a spool which is reciprocated past the plane of the bending station to wrap successive turns and layers of a coil on the spool as the spool is rotated. The reciprocating movement of the spool may be intermittent, i.e., in discrete steps, and may be given a measured delay at the top and bottom positions of the spool to position the turns of each layer opposite the adjacent turns of the next inside layer on the coil. The axis of the spool is movable toward and away from the bending station, and one of the bending rolls is adjustable in accordance with the movement of the spool axis away from the bending station as a coil is built up on the spool so as to automatically increase the radius of bending as the coil diameter increases. An hydraulic valving mechanism is employed having concentric sleeves which include passages therein which when aligned pass fluid therethrough to communicate the cylinder with a fluid supply and discharge system. One of the sleeves is actuated as the strip is coiled on the spool, while the other sleeve is actuated by the reciprocating movement of the spool. The passages in the sleeves are thus intermittently aligned and then nonaligned so as to provide for the intermittent communication of the cylinder through the sleeves with the fluid supply and discharge system. Guide rolls may be employed to support the strip, including rolls adjacent the spool to contain the coil formed on the spool. Of these latter guide rolls, the upper ones may be made pivotable to swing inside the coil to permit the coil to be easily removed from the spool.

3,685,760
COIL HOLDER

Richard M. Fedor, 2662 Shaker Road, Cleveland Heights, Ohio

Filed Feb. 24, 1970, Ser. No. 13,484
Int. Cl. B21c 47/22
U.S. Cl. 242—78.7 26 Claims

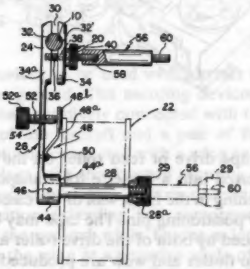


Coil holder has a plurality of side plates which are arranged in pairs and adjustable relative to each other to accommodate different widths of stock material therebetween. The side plates may be independently adjusted or adjusted simultaneously, as desired, and one or both side plates of each pair may be spring-loaded to accommodate for variations in width of the stock material. Apparatus may also be provided for effecting automatic or semi-automatic feeding of the stock and indexing of the holder to bring successive coils into proper alignment with a stock processing line to provide a continuous supply of material therefor.

3,685,761
FIXTURE FOR WINDING FISHING LINE ONTO A FISHING POLE REEL

Raymond J. Zelinski, 6236 W. 130th St., Cleveland, Ohio

Filed Nov. 9, 1970, Ser. No. 87,821
Int. Cl. A01k 89/00
U.S. Cl. 242—84.1 R 9 Claims

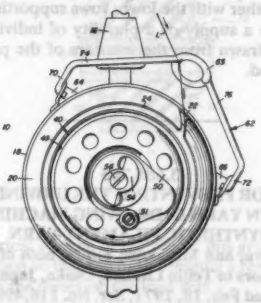


A fixture for transfer of fishing line from a packaged supply spool to the usual reel attached to a fishing pole, and in a manner preventing kinks or entanglements in the line. The fixture provides a novel arrangement including an extensible support shaft means for providing for the mounting of either a single supply spool or a plurality of supply spools of fishing line on the fixture, and with the extensible portion of the spool support shaft means being adapted to be stored in coupled relation to the fixture body when the shaft extensible portion is not being utilized as a spool support. Adjustable braking means is provided for applying a frictional drag to the supply spool during the transferring process of winding the fishing line from the spool onto the fishing rod reel.

3,685,762
SPINNING REEL

Virginia R. Winfree; Louise W. Winfree, and Jack W. Winfree, all of 321 Rutledge Drive, South Daytona, Fla.

Filed July 8, 1969, Ser. No. 839,895
Int. Cl. A01k 89/00
U.S. Cl. 242—84.2 3 Claims



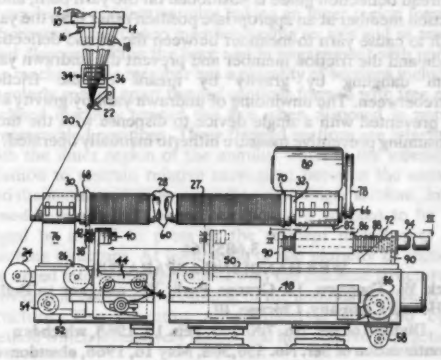
A device for paying out and hauling in a fishing line wherein the improvement comprises improved means for guiding the line during the pay-out such that the necessity of reel rotation is eliminated. This is accomplished by way of a two-position ball or guide having a first position in a plane transverse to the axis of rotation of said reel and a pay-out or casting position wherein a guide loop part of said bail directs the fishing line outwardly along an extension of the reel axis whereby said line is payed out without reel rotation.

3,685,763
Patent Not Issued For This Number

3,685,764
GLASS FIBER FORMING AND SUPPLY PACKAGE

Warren W. Drummond, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 24,625, April 1, 1970, which is a division of Ser. No. 696,791, Jan. 10, 1968, Pat. No. 3,535,097. This application Aug. 11, 1971, Ser. No. 170,758
Int. Cl. B65h 49/00
U.S. Cl. 242—129 4 Claims



Forming packages of glass fiber strand containing a substantially uniform thickness of wound strand are provided by oscillating the strand and winding the oscillated strand in a plurality of superimposed layers on a rotating cylindrical surface bounded by axially-spaced surfaces that extend outward from the strand-collecting surface in gradually-diverging relation-

ship. The ends of the package are formed by winding the strand against the diverging surfaces each time a layer of strand is completed, After winding, the gradually-diverging surfaces are removed to provide a forming package having substantially cylindrical inner and outer surfaces and end surfaces which extend outward in gradually-diverging relationship from the inner surface of the package. The forming package, when dried, is self-supporting. A plurality of these forming packages are horizontally disposed in rows supported one above the other with the lower rows supporting the upper rows to provide a supply of a plurality of individual strands which are withdrawn from the interiors of the packages and further processed.

3,685,765

DEVICE FOR PREVENTING THE UNWINDING OF UNDRAWN YARN IN DRAWING MACHINE FOR SYNTHETIC FILAMENT YARN

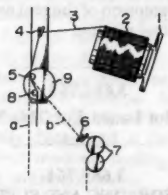
Haruki Takizawa, and Masakuzu Fujita, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Feb. 18, 1971, Ser. No. 116,499

Claims priority, application Japan, Feb. 20, 1970, 45/16731

Int. Cl. B65h *59/00*

U.S. Cl. 242—147 R **9 Claims**



The present invention relates to a device for preventing undrawn yarn from unwinding in a drawing machine for synthetic yarn. In feeding undrawn yarn from a yarn package to a drawing machine before drawing, the free ends of the undrawn yarn tend to fall by gravity in front of the drawing machine. In order that this dangling of yarn may be prevented, a thread deflection guide is positioned on the yarn path, and a friction member at an appropriate position other than the yarn path to cause yarn to meander between the thread deflection guide and the friction member and prevent the undrawn yarn from dangling by gravity by means of the friction therebetween. The unwinding of undrawn yarn by gravity can be prevented with a single device to dispense with the time-consuming preventive measure hitherto manually operated.

3,685,766

WEB HANDLING APPARATUS

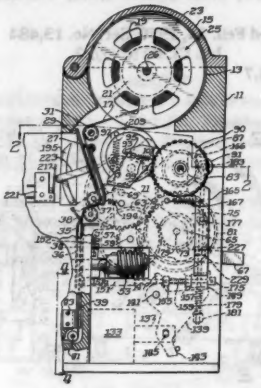
Jack W. Thomsen, La Grange Park, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 706,243, Feb. 19, 1968, which is a continuation of Ser. No. 550,308, May 16, 1966, abandoned. This application Aug. 28, 1969, Ser. No. 871,053

Int. Cl. G03b *1/04*; G11b *15/32*

U.S. Cl. 242—192 **35 Claims**

For initiating feeding of a web from a supply reel for threading through said apparatus and for recoil of the web from a take-up reel onto the supply reel, an axially shiftable roller, which is driven in opposite directions, rocks into and out of



engagement with (1) the web between the supply reel flanges, and (2) a reel flange, according to its relative axial position.

3,685,767

MAGNETIC TAPE TRANSPORTATION DEVICE FOR USE IN TAPE RECORDER USING MINIATURE CASSETTE

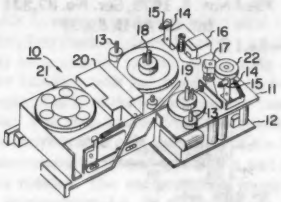
Tokusaburo Kakiuchi; Akira Ando; Hideaki Akiyama, all of Tokyo, and Sei Jinsenji, Yokohama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1970, Ser. No. 98,992

Claims priority, application Japan, Dec. 18, 1969, 44/101260

Int. Cl. G11b *15/32*

U.S. Cl. 242—199 **3 Claims**



A magnetic tape drive or feed roller on the side of a tape recorder is inserted into a cassette for transporting the tape through the opening in the front wall of the cassette for receiving the cassette positioning pin. The tape may be transported at a constant speed by both of the drive roller and the take-up spool, so that no flutter and wow are produced, thus enabling the miniature tape recorder to be used in various fields.

3,685,768

Patent Not Issued For This Number

3,685,769

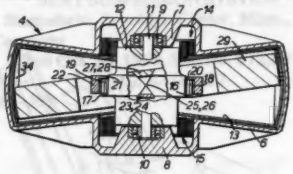
Patent Not Issued For This Number

3,685,770

DAMPERS FOR SPINNING BODIES

Stephen William Tonkin, Bristol, England, assignor to British Aircraft Corporation, Limited, London, England

Filed March 3, 1971, Ser. No. 120,451
Int. Cl. B64c *17/06*; G01c *19/04*
U.S. Cl. 244—1 SA 13 Claims



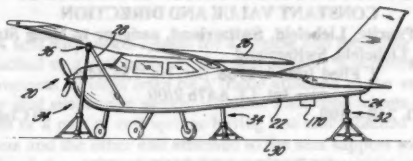
A damper for damping nutational movements of a spinning spacecraft, the damper comprising an outer body which is mounted eccentrically on a spinning part of the spacecraft, and a gyro flywheel rotated at high-speed in the body to provide a reaction member. The gyro flywheel is gimbal-mounted in the outer body for relative tilting in any direction, and is enclosed in an inner casing containing damping liquid by which relative tilting movements between the outer body and the flywheel are damped. In another arrangement the flywheel comprises a quantity of free liquid contained in an inner annular housing journalled in the outer body and motor-driven at high rotational speed. The liquid is rotated by the frictional drag of the inner housing in the form of an annular liquid flywheel which has a self-damping action on tilting movements of the outer body and inner housing.

3,685,771

SECURING DEVICES TO BE USED WITH AIRCRAFT

Herman B. Babich, 152 Clarkson Ave., Brooklyn, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,303
Int. Cl. B64f *1/16*
U.S. Cl. 244—115 10 Claims



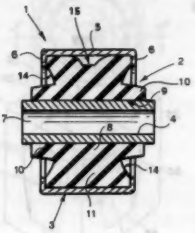
Securing devices to be used with aircraft for securing the aircraft to the ground. The securing devices include a rear securing device operatively connected with the tail region of the fuselage of the aircraft and a pair of forward securing devices operatively connected with a wing extending laterally from the fuselage with the forward securing devices situated equidistant from the fuselage. The rear securing device has an expanded position extending and compressed between the fuselage and the ground while having a length sufficiently great to place the wing at a negative angle of incidence. The pair of forward securing devices have expanded positions extending and compressed between the wing and the ground.

3,685,772

RESILIENT BUSH

Giuseppe Giaccone, Corso Dante 90, Turin, Italy, assignor to RIV-SIf Officine di Villar Perosa S.P.A., Turin, Italy

Filed July 23, 1970, Ser. No. 57,606
Claims priority, application Italy, Aug. 4, 1969, 52885-A/169; July 15, 1970, 868501/70
Int. Cl. F16f *15/08*
U.S. Cl. 248—9 4 Claims



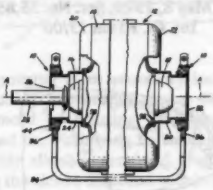
A resilient bush formed from a rubber block with internal and external metal sleeves. The rubber block is placed between the sleeves under compression. In its uncompressed state the block is generally cylindrical with an annular groove on each end face and an annular groove round the mid-point of the cylindrical surface of the block: this groove has a varying cross section so that the bush presents a resilience which is dependent on the direction the load acts.

3,685,773

RESILIENT MOUNTING ARRANGEMENT FOR ROTATING MACHINES AND METHOD OF PRODUCING SAME

Charles W. Otto, Dekalb, Ill., assignor to General Electric Company

Filed Oct. 24, 1969, Ser. No. 869,147
Int. Cl. F16m *13/00*
U.S. Cl. 248—26 14 Claims

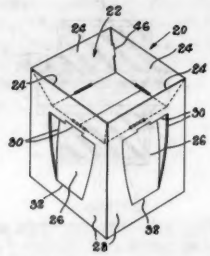


A resilient mount for a rotary dynamoelectric machine comprising a resilient annulus having an inner region forming a bore and a rigid hoop member having an axis and as assembled disposed within the bore and in engagement with part of the machine. The member has a plurality of sections including angularly spaced apart flanged sections formed with free ends inclined inwardly toward the axis when disposed in normal preassembled positions. These flanged sections are interfitted with the inner region of the annulus when in the assembled position to restrain relative movement between the annulus and the member. Axially extending rigid finger sections, interposed between the flanged sections, are adapted to be engaged by a tool to press fit the resilient mount over the machine structure. At least some of the plurality of sections are urged into firm engagement with the machine structure to provide a nonrotatable mounting of the annulus relative to the structure. This mounting arrangement is produced by a method which is relatively simple and inexpensive to practice.

3,685,774

Patent Not Issued For This Number

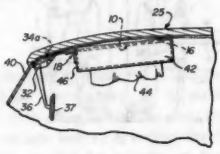
3,685,775
DUMP BIN
Vincent Fortunato, Valley Stream, N.Y., assignor to Henschel-Steinau Co., Palisades Park, N.J.
Filed Sept. 21, 1970, Ser. No. 73,952
Int. Cl. B65d 5/52
U.S. Cl. 248—174 6 Claims



A dump bin formed of a one piece sheet of corrugated paper board or similar material having an upper tray to receive the product, the upper tray being supported by inwardly projecting portions of the lower sides of the bin and including interlocking means for holding the tray elements in position.

3,685,776
Patent Not Issued For This Number

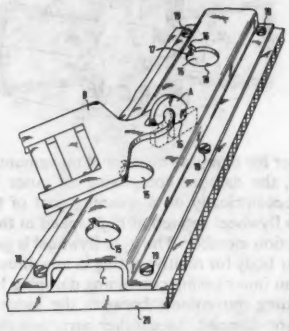
3,685,777
TISSUE BOX BRACKET
Joseph Dema, 5929 Wash. St., Morton Grove, Ill.
Filed May 8, 1970, Ser. No. 35,854
Int. Cl. F16m 13/00
U.S. Cl. 248—205 1 Claim



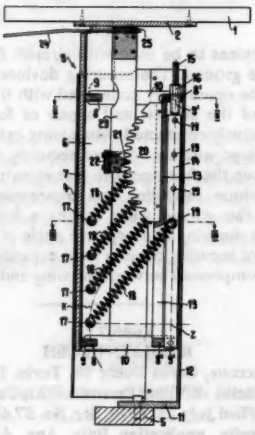
A bracket mountable between the inner ends of automobile visors so that a tissue box may be mounted thereon by impaling said box by a piercing end of said bracket.

3,685,778
SUSPENSION FITTING FOR CARGO SAFETY STRAPS
Harald Berns, Wuppertal-Elberfeld, Germany, assignor to Firma Herbert Sehlbach K.G., Wuppertal-Barman, Germany
Filed Nov. 3, 1970, Ser. No. 86,568
Claims priority, application Germany, Oct. 23, 1969, P 69 41 229.9; Sept. 3, 1970, P 70 32 822.2
Int. Cl. B61d 45/00; B60p 7/06
U.S. Cl. 248—361 A 7 Claims

A suspension fitting for the fastening of cargo safety straps to supports developed as perforated rails and arranged on a cargo holder, container or the like, said supports having suspension openings having in contour substantially the shape of a key bitt, said fitting which comprises a rail anchor of substantially asymmetric omega shape connected with the perforated rail and forming an anchor eye. An eye plate is connected with the rail anchor and serves for the fastening of the safety strap. Anchor hook webs adjoin the anchor eye and extend in opposite directions to define therebetween an introduction opening. A securing member is inserted for the attachment of the eye plate to the anchor eye. The anchor hook webs extend behind the perforated rail outside the suspension openings and have a length different from each other. The suspension openings have a key bitt shaped notch. The longer of the anchor hook webs have a length measured from the vertical longitudinal center axis of the rail anchor and are greater than the distance from the center point of the suspension openings of the perforated rail to the edge of the key bitt notch, and the shorter of the anchor hook webs have a length lesser than that of the longer of the anchor hook webs but exceeding the distance from the center point of the suspension opening of the perforated rail to the notch-free edge of the suspension openings and a cross-sectional width greater than the inside width of the notch.



3,685,779
DEVICE FOR COMPENSATION OF A FORCE OF CONSTANT VALUE AND DIRECTION
Hans Papritz, Liebefeld, Switzerland, assignor to Haag Streit AG, Liebefeld, Switzerland
Filed June 4, 1968, Ser. No. 734,448
Int. Cl. A47b 9/00
U.S. Cl. 248—399 10 Claims



This invention relates to a device for compensation of a force of constant value and direction, for instance the weight of a vertically adjustable instrument table, wherein the anchoring points of compensating springs are so guided along

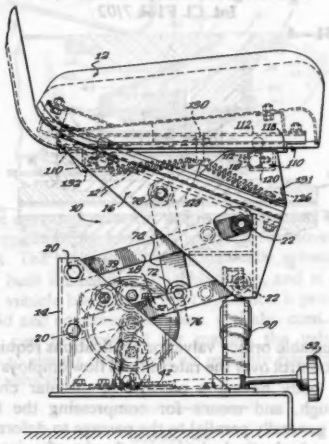
circular paths that the force is fully compensated for various positions of the compensating device.

3,685,780

SEAT SUSPENSION SYSTEM

Clifford E. Stannebein, Brooklyn Center, Minn., assignor to J. I. Case Company

Filed Oct. 30, 1969, Ser. No. 872,607
Int. Cl. A47c 3/22
U.S. Cl. 248—399 15 Claims



A seat suspension system for a vehicle and including a seat attached to a seat support. The seat support is supported for movement through links on a frame attached to the vehicle. The seat suspension system includes stabilizing means in the form of a pair of coil springs having one end attached to the frame and the other end attached to the seat support with the ends of the springs limited for rotational movement only so that the effective spring force per increment of seat displacement increases non-linearly relative to the displacement of the seat support. The stabilizing means further includes a pair of shock absorbers which are positioned between the frame and the seat support and are attached in a manner that the shock absorbers will be substantially fully retracted in the normal ride position of an operator.

The seat suspension system further includes interconnecting mechanism between the seat and seat support which accommodate movement in four directions from a central position.

3,685,781

DECORATIVE PICTURE HANGER ASSEMBLY

Robert B. Webster, Newport Beach, Calif., assignor to Newell Mfg. Co., Freeport, Ill.

Filed Dec. 21, 1970, Ser. No. 99,755
Int. Cl. A47f 7/14
U.S. Cl. 248—497 9 Claims

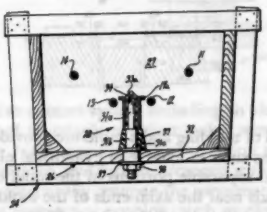
A decorative support assembly comprising a decorative medallion and a support with a hooked end for hanging pictures. The support includes a horizontal mounting plate to be received within one of a plurality of vertically spaced horizontal slots in the back of the medallion to selectively position the latter relative to the support.

3,685,782

CONCRETE POURING FORM ACCESSORY

Edward L. Kowell, Greenbrae, Calif., assignor to J. A. Pomeroy & Company, Inc., San Francisco, Calif.

Division of Ser. No. 716,516, March 27, 1968, Pat. No. 3,557,274. This application Oct. 21, 1970, Ser. No. 82,638
Int. Cl. E04g 17/04; B28b 7/00
U.S. Cl. 249—86 3 Claims



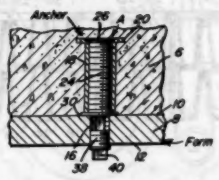
A concrete pouring form accessory includes a post which supports a slidably removable sleeve and insert threaded thereto in a mold or pouring form during pouring of a concrete railroad tie. Following hardening of the railroad tie, the tie is readily slidably removed from the support post thereby leaving the sleeve disposed within the insert to protect threads of the insert until the sleeve has been unscrewed from the insert (usually at the time of bolting rails to the railroad tie). A resilient annular cone-shaped sealing element forms a plug behind the insert and sleeve to preclude the application of blocking concrete behind the sleeve and the support post.

3,685,783

INSERT FOR EMBEDDED FITTINGS

Eugene R. Hilson, Miami, Fla., assignor to Maule Industries, Inc., Miami, Fla.

Filed May 21, 1970, Ser. No. 39,207
Int. Cl. B28b 7/16
U.S. Cl. 249—94 5 Claims



A form in which concrete, or an equivalent moldable material, is poured to provide a finished product. A panel or

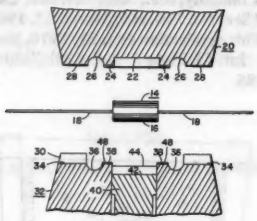
wall portion of the form or mold is equipped with means for distributively positioning and embedding hollow sleeve-like anchors or fittings. Each means or device embodies a plastic or an equivalent insert or dowel over which the anchor or fitting is sleeved and temporarily held in a manner that it can be embedded at the desired locale in the finished product. After the poured material hardens, adapter means—which constitutes a lower disposable component part of the dowel—is broken off at a frangible or preweakened point. The finished product with the dowel-sealed-anchors is freed for shipment. The adapter stays put in the form until it is subsequently dislodged and discarded.

3,685,784

INJECTION MOLD WHEREIN MOVEABLE CAVITY PORTIONS ACT TO CLOSE THE MOLD GATES AND FURTHER COMPRESS THE MOLD MATERIAL

Keith Gordon Spanjer, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 19, 1969, Ser. No. 878,104
Int. Cl. B29c 1/00
U.S. Cl. 249—110 3 Claims



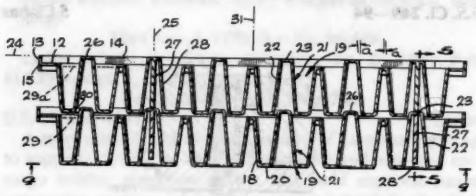
A method of molding and a mold are provided for encapsulating devices such as axial lead cylindrical electrical devices in which two separable portions of the mold closely embrace the axial leads near the axial ends of the mold cavity and one of the mold portions includes piston-like parts, one for each molding cavity, which moves between at least two positions. In one position of a piston-like part of the mold, and mold cavity is open to receive encapsulating fluid and in the other position of the part the mold cavity is completely closed. In a modification, the piston-like parts are each shaped and positioned to form parts of adjacent molding cavities. The molding process involves supplying encapsulating fluid to the several cavities by applying pressure to the whole body of fluid and applying higher pressure to the fluid in each molding cavity.

3,685,785

ICE CUBE TRAY OR THE LIKE

Gordon R. Brown, La Puente, Calif., assignor to All-Power Manufacturing Co., Montebello, Calif.

Filed May 21, 1970, Ser. No. 39,454
Int. Cl. B28b 7/06
U.S. Cl. 249—129 7 Claims



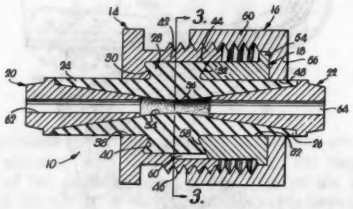
An ice cube tray which is adapted to be stacked in superimposed relation with one or more additional similar trays, and which is specially constructed so that, in one relative orientation of the trays the upper tray can nest downwardly into the ice forming cavities in the lower tray in a manner allowing stacking of a large number of the trays together in a relatively small space for shipment or storage, whereas in another relative orientation an upper tray is supported on the lower tray at a higher level relative thereto, to leave the ice forming cavities of the lower tray sufficiently open and accessible for freezing of ice therein.

3,685,786

ELASTIC VALVE ELEMENT HAVING VARIABLE ORIFICE

Riley D. Woodson, 2012 W. 50th Terrace, Shawnee Mission, Kans.

Filed Aug. 31, 1970, Ser. No. 68,106
Int. Cl. F16k 7/02
U.S. Cl. 251—4 3 Claims



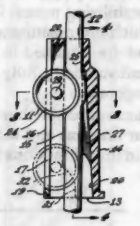
An adjustable orifice valve for applications requiring highly accurate control over the rate of fluid flow employs a resilient, yieldable body having a passage of circular cross-section therethrough, and means for compressing the body in a direction generally parallel to the passage to deform the body inwardly and selectively determine the size of a circular orifice formed in the passage.

3,685,787

APPARATUS FOR REGULATING FLUID FLOW THROUGH PLASTIC TUBING

Marvin Adelberg, 4043 Cody Road, Sherman Oaks, Calif.

Filed Sept. 8, 1969, Ser. No. 855,907
Int. Cl. F16k 7/06
U.S. Cl. 251—6 9 Claims



The rate of flow of a fluid through plastic tubing is varied by clamping a portion of a circumferential section of the tube wall with sufficient force to fully close that part of the passage between the clamped wall portions, permitting fluid flow only through the resulting, remaining open cross-sectional area. Cold flow of the plastic material of the clamped portion of the tubing wall, such as might otherwise effect a change in the remaining cross-sectional flow area, is prevented or minimized by rigidly confining the clamped section. To adjustably vary the flow rate, the operative, passage-defining wall section of the tubing is varied by uniformly varying the ratio of the sec-

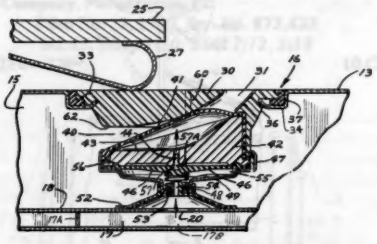
tion of clamped tubing, and the remaining operative wall portion of the tubing, or by deforming the operative wall portion.

3,685,788

VALVE FOR LEVITATED VEHICLE TRACK

Roger D. Bloomfield, St. Louis Park, Minn., assignor to Uniflo Systems Company, Edina, Minn.

Filed May 15, 1970, Ser. No. 37,691
Int. Cl. A63g *21/00*; F16k *31/365*
U.S. Cl. 251—28 6 Claims



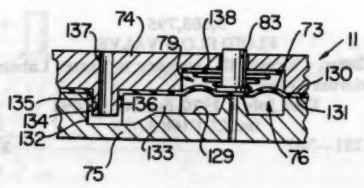
A pilot operated valve for use in combination with a track which supplies air for levitating a vehicle for movement along the track. The valve may be automatically actuated by pilot pressure built up underneath the vehicle, and is self-closing after the vehicle has passed. Pilot operation is provided to insure rapid and accurate operation, and also control pressure conduits can be provided for making the valve open in response to signals other than air pressure rise underneath a levitated vehicle.

3,685,789

PNEUMATIC CONTROL SYSTEM AND PNEUMATIC CONTROL DEVICE FOR SUCH A SYSTEM OR THE LIKE

Louis M. Puster, and Edward M. Caldwell, both of Knoxville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 812,757, April 2, 1969, Pat. No. 3,556,399. This application Sept. 21, 1970, Ser. No. 74,110
Int. Cl. B03d *3/00*
U.S. Cl. 251—61.2 3 Claims



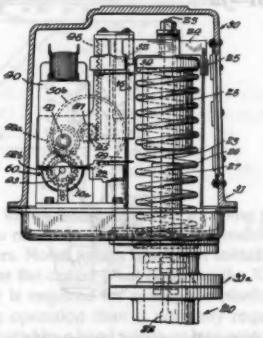
A pneumatic control system having a source of control fluid providing two different control pressure levels for respectively switching the control device of the system from one operating condition thereof to another operating condition thereof, the control device comprising a pair of condition controller means each having a sensor and a bleed-type pneumatic valve operated thereby together with relay means operatively interconnected to the source for directing a branch signal of the control fluid to a pneumatically operated device in relation to a pilot signal directed to a pilot chamber of the relay means by one of the control means. First and second passage means are adapted to respectively interconnect the source to the valves of the control means, a pressure responsive means being disposed in the first passage means for preventing fluid communication therethrough when the source is at one pressure level and permitting fluid communication therethrough when the source is at its other pressure level. A switching means is provided in a third passage means and has one position for interconnecting only the second passage means to the pilot chamber whereby the pilot signal for the relay means is provided only by one of the controller means and having another position for interconnecting only the first passage means to the pilot chamber whereby the pilot signal or relay means is provided only by the other controller means.

3,685,790

VALVE ACTUATING MECHANISM

Harold W. Crowe, Muncie, Ind., assignor to Maxon Corporation, Muncie, Ind.

Filed April 30, 1971, Ser. No. 138,977
Int. Cl. F16h *5/40*
U.S. Cl. 251—67 9 Claims



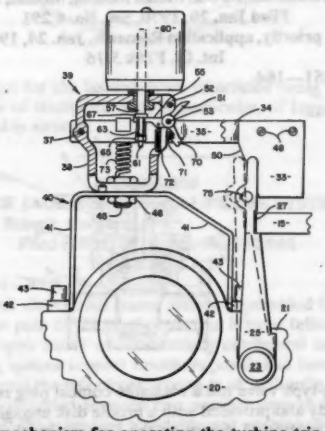
A safety valve control system including an electromagnetic clutch arranged to couple a driven valve member to drive means and to brake against valve retraction under normal operating conditions, and further arranged with a clutch control circuit to electrically dampen the movement of the valve member to an emergency position, such as closed, when an emergency condition occurs.

3,685,791

TRIP MECHANISM FOR TURBINE TRIP VALVE

Charles C. Czuszak, and Richard A. Worthen, both of Greensburg, Pa., assignors to Carrier Corporation, Syracuse, N.Y.

Filed April 26, 1971, Ser. No. 137,303
Int. Cl. F16k *31/44*
U.S. Cl. 251—69 4 Claims



The trip mechanism for operating the turbine trip valve to closed position includes an actuating lever mounted at one

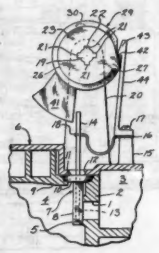
end for movement about a fixed pivot and being provided at the opposite end with a cam block. Spring means or the like acts upon the actuating lever to move the cam block into engagement with the trip valve restraining member to move it out of restraining position for closure of the trip valve. A latch is provided for latching the actuating lever against such pivotal movement. The latch is moved out of latching position by means, such as a solenoid, responsive to a signal indicative of an abnormal situation detrimental to the operation of the turbine.

3,685,792

SNAP ACTION VALVE ACTUATOR

Donald S. Henning, Thiensville, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Filed April 22, 1971, Ser. No. 136,433
Int. Cl. F16k *1/18, 31/44*
U.S. Cl. 251—75 **10 Claims**



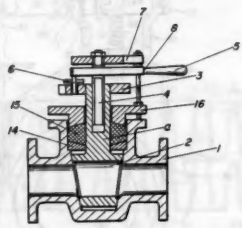
A cam is rapidly rotated against the actuating stem of a flapper valve to quickly open the valve. The cam is formed on a ratchet wheel which is mounted for limited rotary motion around a rotor. The rotor and attached ratchet wheel are driven slowly forward by a cam shaft until the ratchet wheel is locked by an engaging pawl. The rotor continues to rotate, winding a bias spring connecting the ratchet wheel and rotor. The pawl is disengaged by an escapement cam extending from the rotor and the bias spring unwinds, snapping the ratchet wheel and cam forward to actuate the valve. The valve is held open until the cam is rotated clear of the actuating stem.

3,685,793

PLUG-TYPE VALVE WITH LOST-MOTION ACTUATOR

Wladislaw Szumilas; Macedon Emil Adam; Ilie Lata, and Gheorghe Muresan, all of Medias, Romania, assignors to Uzina Mechanica De Gas Metan Medias, Medias, Romania

Filed Jan. 20, 1970, Ser. No. 4,291
Claims priority, application Romania, Jan. 24, 1969, 58865
Int. Cl. F16k *5/16*
U.S. Cl. 251—164 **1 Claim**



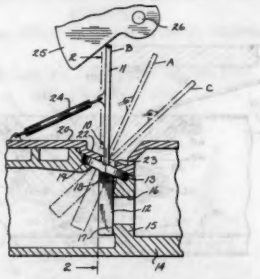
A plug-type valve has a rotatable conical plug received in a valve body and provided with a profile disk engaging a handle with lost motion. A detent on the disk retains the handle and disk for joint rotation until the disk engages a stop, whereupon rotation of the handle is permitted to axially shift the plug by screw action.

3,685,794

FLAPPER VALVE ASSEMBLY

Donald S. Henning, Thiensville, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

Filed April 23, 1971, Ser. No. 136,697
Int. Cl. F16k *1/18*
U.S. Cl. 251—303 **4 Claims**



A flapper valve assembly is disclosed which includes a valve element having a flange of elastic material formed intermediate of a flap portion and an actuating stem. The valve element is inserted through a lateral opening in a valve body with the flange disposed against a mounting surface which surrounds the lateral opening and with the flap portion opposing a valve seat in the valve body. The flange is clamped in place upon the mounting surface by a closure member which is secured to the valve body so that the flange seals the lateral opening in the valve body. The flange provides a flexible pivot for the movement of the flap portion toward and away from the valve seat in response to movement of the stem. The flange is formed normal to the flap portion and the mounting surface is inclined toward the valve seat so that the flap portion will be held away from the valve seat when the valve element is in a neutral position with the flange in a relaxed condition. A spring is connected to the stem to urge the flap portion against the valve seat thereby closing the valve. The valve is opened by moving the stem, against the force of the spring, so that the flap portion is pivoted from its closed position, through the neutral position and into a fully opened position.

3,685,795

FLUID FLOW VALVE

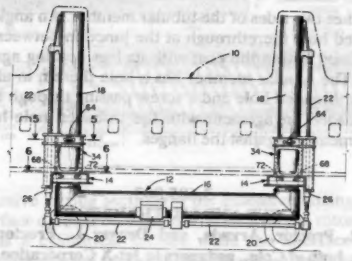
Glenn Caster, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed July 6, 1970, Ser. No. 52,493
Int. Cl. F16k *31/58*
U.S. Cl. 251—342 **2 Claims**

A fluid flow valve is disclosed which comprises a tubular member which carries a pierceable sealing diaphragm

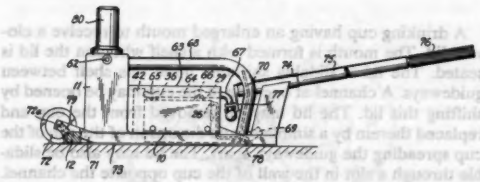
mounted therein to prevent fluid flow. A pointed piercing spike is mounted coaxially with the tubular member and is movable to pierce the diaphragm with its point. A section of the spike is proportioned to sealingly occlude the bore of the tubular member after piercing of the diaphragm to prevent fluid flow through the tubular member, but to permit fluid flow through the tubing upon removal of the proportioned section from the bore of the tubular member.

3,685,796
BOLSTER ASSEMBLY
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to The Budd Company, Philadelphia, Pa.
Filed Nov. 3, 1969, Ser. No. 873,423
Int. Cl. B60p 1/10; B66f 7/12, 3/18
U.S. Cl. 254—7 R **10 Claims**



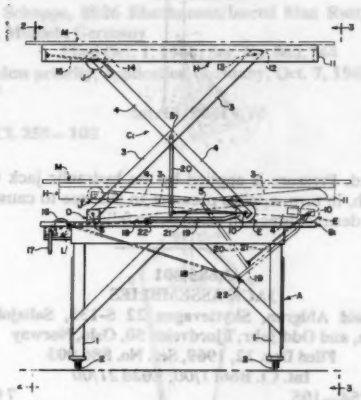
A support bolster for a vehicle body providing lateral and longitudinal stability for a vehicle body mounted thereon.

3,685,797
JACK
Bengt Erik Orr, Nas, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed March 15, 1971, Ser. No. 124,189
Claims priority, application Sweden, March 13, 1970, 3338/70
Int. Cl. B60p 1/48
U.S. Cl. 254—8 B **12 Claims**



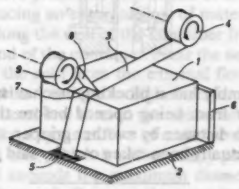
This invention relates to a jack having a compressed-air motor for operating a pump to supply liquid, such as oil, to a lifting cylinder. The compressed-air motor and pump form a unitary structure which is detachably connected to a frame upon which the lifting cylinder also is mounted. The frame has a base and is provided with passageways for conducting the liquid between the pump and lifting cylinder. The base is detachably mounted in an operative position by attaching means associated with a lifting device. A number of such attaching means each associated with a different type of lifting device can be employed to mount the base in an operative position, so that the aforementioned unitary structure or one like it can be detachably mounted in an operative position by any one of the attaching means for use in a particular kind of lifting operation.

3,685,798
CEILING PANEL LIFTING DEVICE
John Zoller, 1997 Placer Drive, San Leandro, Calif.
Filed March 9, 1971, Ser. No. 122,350
Int. Cl. B60p 1/48
U.S. Cl. 254—9 C **3 Claims**



A ceiling panel lifting device in which a ceiling panel supporting platform is raised and lowered by expansible and collapsible X-members. Novel means is used for initially exerting an upward thrust at the center pivot point for the X-members so that less power is required for raising the platform at the start of the lifting operation than is normally required. The device can be operated by a hand winch or by a motor.

3,685,799
APPARATUS FOR LASHING-DOWN OF ARTICLES
Alfred Wriedt, Kroonhorst 130, Hamburg 53, Germany
Filed March 5, 1971, Ser. No. 121,340
Int. Cl. B60p 7/10; B66f 1/00
U.S. Cl. 254—51 **7 Claims**



Apparatus for the lashing-down of articles being conveyed in a means of transport, and, in particular, of luggage being transported in aircraft.

3,685,800
TREE JACK DIRECTIONAL FRAME SYSTEM
Carlyle W. Schock, Culpeper, Va.
Filed Feb. 5, 1971, Ser. No. 112,946
Int. Cl. B66f 3/24
U.S. Cl. 254—93 R **5 Claims**

A tree jack directional frame system is provided for use in directing the path of travel of a tree that is to be felled. It consists of an open frame of substantially equilateral configuration, having spaced support members positioned between the sides to prevent the sides from bowing in. A hydraulic or screw type jack is provided between two parallel support members and it is used for extending a slidable rod positioned within a housing and having an arcuate member or bar on one end thereof for engaging and biting into a tree intermediate the

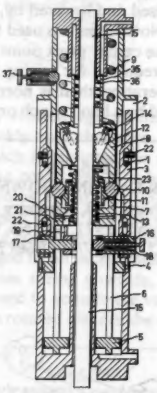
height of the tree. The opposite end of the rod is coupled to the hydraulic jack. One side of the frame is positioned against

the ground. Pressure is applied by the hydraulic jack to the rod, which, in turn, applies pressure to the tree to cause it to fall in the desired direction when being felled.

3,685,801
JACK ASSEMBLIES

Nils Harald Ahlgren, Skyttevagen 22 S-133, Saltsjobaden, Sweden, and Odd Jahr, Fjordveien 50, Oslo, Norway

Filed Dec. 22, 1969, Ser. No. 886,903
Int. Cl. B66f 1/00; E02d 21/00
U.S. Cl. 254—105 **7 Claims**



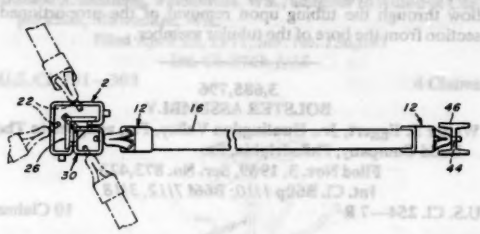
A jack assembly has a blocking mechanism to prevent the loaded gripper from being opened before the load has been raised a certain distance by another gripper, thus ensuring that the load has actually been taken over by said gripper.

3,685,802
CONNECTION BETWEEN A BRACE RAIL AND A FENCE POST

James E. Ashworth, Moraga, Calif., assignor to United States Steel Corporation

Filed May 13, 1971, Ser. No. 142,866
Int. Cl. E04h 17/02
U.S. Cl. 256—35 **8 Claims**

A connection between a corner fence post having two longitudinal sides arranged at right angles to one another, a short side connected to the free end of each longitudinal side at right angles thereto, and an inwardly extending flange attached to each side at right angles thereto, and an inwardly extending flange attached to each side at right angles thereto with a vertical opening between the ends of the flange and a brace rail arranged at an angle other than 90° to the fence post includes a sleeve shaped to receive the end of the rail and a pin attached to the outer end of the sleeve. The pin is adapted to be received in an over-sized hole in the post. In some instances the hole may be in the post proper, but in most instances it will be in a square tubular attachment to the post. Each of the flanges has a notch in its end aligned with the notch of the other flange and the tubular attachment has top and bottom outwardly extending lugs on two adjacent sides which extend into the aligned notches with these adjacent sides bearing against the flanges. The over-sized holes are provided in each

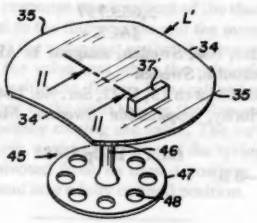


of the other two sides of the tubular member. An angle having a threaded hole therethrough at the junction between its legs is positioned within the post with its legs bearing against the flanges. The tubular member has a hole therein in alignment with this threaded hole and a screw passing through that hole into threaded engagement with the threaded hole holds the angular member against the flanges.

3,685,803
CUP AND LID THEREFOR

Rudy R. Proctor, Arvada, and Denver L. Proctor, Wheat Ridge, both of Colo., assignors to Jet-X Corporation, Denver, Colo.

Filed Dec. 23, 1970, Ser. No. 100,921
Int. Cl. B01f 15/02
U.S. Cl. 259—1 R **14 Claims**



A drinking cup having an enlarged mouth to receive a closure lid. The mouth is formed with a shelf whereon the lid is seated. The lid is slidably shiftable upon this shelf between guideways. A channel at one side of the cup may be opened by shifting this lid. The lid may be removed from the cup and replaced therein by a simple elastic distortion of the rim of the cup spreading the guideways apart. The lid may also be slidable through a slot in the wall of the cup opposite the channel. This lid may be provided with projections to snap under the edge of the slot and position the lid to open the channel.

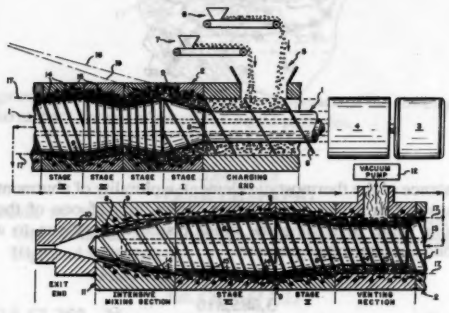
3,685,804
MIXING APPARATUS AND METHOD

Manfred D. Stansfield, Edison, N.J., assignor to Sterling Extruder Corporation, South Plainfield, N.J.

Continuation-in-part of Ser. No. 69,350, Sept. 3, 1970, abandoned. This application Oct. 26, 1970, Ser. No. 83,959
Int. Cl. B01f 7/02
U.S. Cl. 259—10 **47 Claims**

A mixing apparatus and method for mixing materials, such as plastics, comprising an outer stator member and an inner rotor member mounted for rotation and axial movement therein. The apparatus has a charging end and an exit end; and both the rotor and stator have cooperating screw threads

along their lengths for feeding material through the apparatus. An extensive mixing section, defined by the cooperating threads of the rotor and stator, extends from the charging end toward the exit end of the apparatus. In this section, the cumulative groove depth of the rotor and stator is progressively smaller at locations nearer the exit end of the apparatus. An intensive mixing section is provided at the exit end of the apparatus for further mixing the material after it passes through



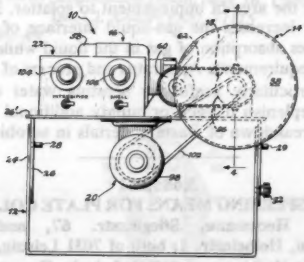
the extensive mixing section. In the extensive mixing section, the interface defined between the threads on the rotor and stator forms a cylindrical surface while the interface defined between the threads in the intensive mixing section forms a conically tapered surface. Axial relative adjustment of the rotor and stator changes the clearance between the rotor and stator in the intensive mixing section to vary the extent of mixing but such adjustment does not have any appreciable effect on the mixing in the extensive mixing section of the apparatus.

3,685,805

RESEARCH BLENDER

John J. Fischer, and John W. Sibley, both of East Stroudsburg, Pa., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Filed April 7, 1971, Ser. No. 132,116
Int. Cl. B01f 9/08
U.S. Cl. 259—85 **7 Claims**



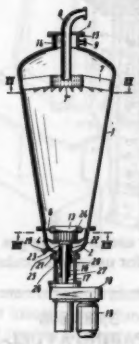
A blender particularly adapted for conducting experiments in blending particulate materials, wherein the blender includes an axially shallow drum-like container formed of a transparent material. The container is mounted for adjustable swinging movement between substantially horizontal loading-unloading and substantially vertical blending positions. The container and an internal agitating device therefor are independently supported for rotation about a common drive axis; the container being further attitude-adjustable relative to the drive axis to provide for both axial and radial blending performance observations.

3,685,806

METHOD OF STIRRING MATERIALS AND APPARATUS THEREFOR

Fritz Schoppe, 8026 Ebenhausen/Isartel Max Ruttgers, Strs. 24, Munich, Germany

Filed Oct. 1, 1969, Ser. No. 862,744
Claims priority, application Germany, Oct. 7, 1968, P 18 01 626.7
Int. Cl. B01f 7/16
U.S. Cl. 259—108 **19 Claims**



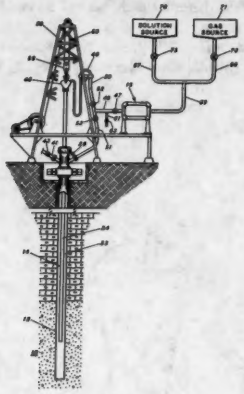
A method of stirring to mix a liquid material with another material, such as another fluid (liquid or gas) or a finely divided solid, in a container. A circulation of the materials is generated within the container between one container end and the other end of the container, which is at least equal to the diameter of the first end. A circulating force is imparted to the materials at the first end of the container to create a limited throughflow with a helical peripheral component creating a negative pressure at the center of the first end of the container producing an external flow of materials in an outer zone rotating along the wall of the container from the first end to the second end of the container. Near the second end a substantial part of the spin from the external flow at the second end is removed to produce a higher static pressure at the center of the second end than at the center of the first end, to establish an internal laminar flow of materials from the second end to said first end, which is substantially parallel to the external flow and exceeds the maximum diameter of the confined material flow path. Between the oppositely moving inner and outer paths of material flow, an annular elongate zone of turbulence is generated to create efficient mixing of the materials. The disclosure shows several embodiments of a stirring container apparatus to accomplish mixing between parallel zones of oppositely moving material; namely a container having a base at one end, a cover closing the other end, a liquid driving or circulating unit including an impeller within the container at one end, e.g. the base end. The impeller is shaped to cause material flow leaving the impeller to follow a path adjacent the base wall to the adjoining container wall and then along the container wall with a spin or spiralling flow to the other end of the container where vanes remove the spin and the material flow is reversed at the cover end to pass back along the center of the container. The diameter of the cover end is at least equal to and preferably greater than the base end and the length of the interior space of the container exceeds the maximum interior diameter of the container. The container walls between the base and cover should be smooth and either cylindrical or frusto-conical, preferably the latter for most efficient operation.

3,685,807

APPARATUS FOR FORMING FOAM FOR USE IN WELLS

Albert E. Campbell, Mammoth Lakes, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 3, 1969, Ser. No. 882,148
Int. Cl. B23c 5/06
U.S. Cl. 259—147 3 Claims



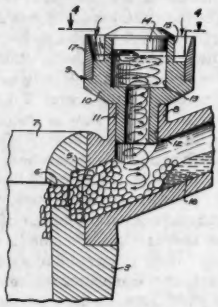
A foam generator for use in mixing gas and a foamable solution to preform a foam for use as a circulating fluid in a well.

3,685,808

MEANS OF PREPARING A FUEL-AIR MIXTURE

Conrad A. Bodai, Arcadia, Calif., assignor to Technoscience Systems, Inc., La Puente, Calif.

Filed July 23, 1970, Ser. No. 57,524
Int. Cl. F02m 27/08
U.S. Cl. 261—1 7 Claims



A means and method wherein a portion of an air supply is diverted, subject to intense turbulence, then injected into a fuel supply to create a turbulent fuel-air premixture which is immediately introduced into the air supply. Further included in some embodiments is a means of producing mechanical vibration in parts located in the region wherein premixing occurs, and in the region wherein introduction of the premixture into the main air supply occurs.

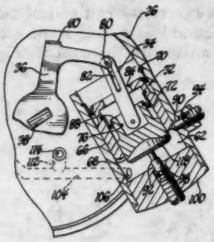
3,685,809

AUTOMATIC CHOKE

William O. Manning, 543 Leicester, Plymouth, Mich., assignor to Holley Carburetor Company, Warren, Mich.

Filed Oct. 16, 1969, Ser. No. 866,904
Int. Cl. F02m 1/08
U.S. Cl. 261—39 B 9 Claims

An automatic choke for a carburetor includes a thermostatic element for variably urging the choke valve closed, in accordance with decreasing ambient temperatures, and a plurality of vacuum responsive pistons, one slidably received within the other, for moving the choke valve open against the resistance of the thermostatic element; a plurality of abutment means are provided for arresting the motion of one of the pistons while permitting the other piston to continue to a second predetermined position.

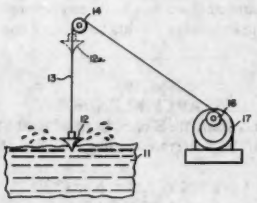


3,685,810

SPLASH SURFACE AERATOR

Hartwell Forrest Calcote, Princeton, N.J., assignor to AeroChem Research Laboratories, Inc.

Filed Aug. 17, 1970, Ser. No. 64,237
Int. Cl. B01f 3/04
U.S. Cl. 261—81 8 Claims



Apparatus and process for aerating a liquid by subjecting the surface of the liquid to the impingement of a body to cause the liquid in the area of impingement to splatter. Splattering substantially increases the gas-liquid interface of the liquid and facilitates absorption of gas in the liquid while requiring low power requirements. Apparatus and process of this invention are particularly useful for aerating water or sewage wastes to replenish oxygen or supply additional oxygen to aid in the breakdown of waste materials in aerobic systems.

3,685,811

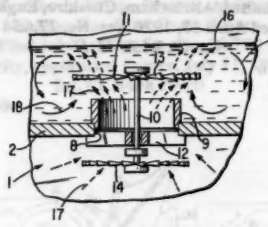
GAS-DISPERSING MEANS FOR PLATE COLUMNS

Carl-Justus Heckmann, Stieglitzstr. 67, and Michael Heckmann, Holbeinstr. 1, both of 7031 Leipzig, Germany, assignor to Heckmannwerk KG, Leipzig, Germany

Filed Feb. 18, 1969, Ser. No. 800,219
Int. Cl. B01d 3/16
U.S. Cl. 261—114 R 3 Claims

In a plate column including a plurality of spaced horizontal plates provided with downcomers, a plurality of openings in the plates for passage of the vapors upwardly, and short nipples disposed in the openings, the improvement residing in the provision over the nipples of rotatable, vertically movable disks having circumferentially arranged fan elements. The diameter of the disks is such that when insufficient quantity of

vapor is generated, the disks descend onto the short nipples to block flow of any vapor therethrough. A fan wheel may be



provided below each disk in the vapor space of the lower plate to restrict escape of entrained liquid particles.

3,685,812
VEHICLE SPRING

David M. Buchesky, Detroit, and John R. Somjak, Garden City, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 2, 1970, Ser. No. 69,024
Int. Cl. F16f *1/22*
U.S. Cl. 267—36 4 Claims

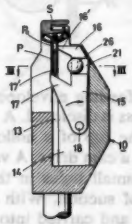
Leaf spring for an automotive vehicle, the spring having two portions each of which have different curvatures in an unstressed condition.

3,685,813
Patent Not Issued For This Number

3,685,814
SLIDER HOLDER

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 6, 1971, Ser. No. 140,684
Claims priority, application Japan, May 16, 1970, 45/41765
Int. Cl. A44b *19/00*, *11/25*
U.S. Cl. 269—49 6 Claims

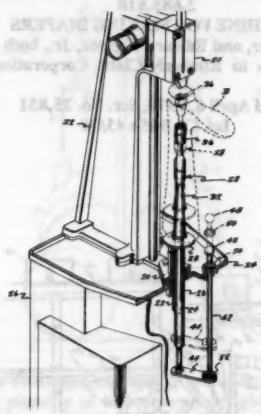


In the art of assembling a slide fastener, there is provided a device for holding a sliding member or slider in position for threading the same through a slide fastener chain which device comprises a spring-actuated lever means for releasably retaining the slider in locked position without having to employ any external driving power.

3,685,815
HORN LIFTING MEANS FOR FASTENER INSERTING MACHINE

John G. Wright, and James M. Chafin, both of Atlanta, Ga., assignors to Textron Inc., Providence, R.I.

Filed Feb. 17, 1971, Ser. No. 116,077
Int. Cl. B23q *3/8*
U.S. Cl. 269—58 3 Claims



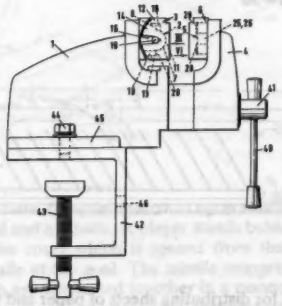
Alternative lifting means is provided for the work supporting horn of a fastener inserting machine so that the horn may be vertically adjusted readily whenever the nature of the work being supported does not allow such adjustment in normal fashion, as when the heel of a boot is being supported and the bottleg covers the normally exposed horn structure against access.

3,685,816
Patent Not Issued For This Number

3,685,817
VICES

Geoffrey George Worthington, 48 Eaton Road, Orpington, England

Filed May 7, 1970, Ser. No. 35,411
Int. Cl. B25b *1/24*, *5/16*; B23a *3/10*
U.S. Cl. 269—139 2 Claims



A vice comprising a body part, a slide part movable relative to the body part 8 at least one jaw member pivotally mounted on the body part or the slide part so as to move angularly in a

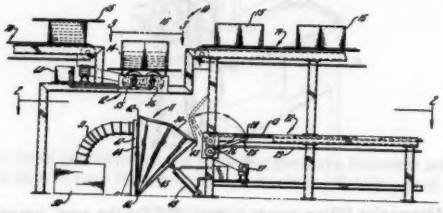
plane to accommodate a tapered article between the two jaws of the vice. Alternatively, there may be an adapter for fitting to a conventional vice and a jaw can be pivotally mounted to this adapter.

3,685,818

MACHINE FOR MAKING DIAPERS

William H. Burger, and Edward Rightor, Jr., both of Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed April 6, 1970, Ser. No. 25,851
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 **16 Claims**



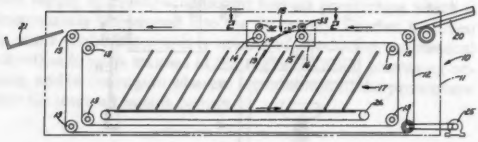
A method and apparatus for folding and packaging diapers is disclosed. The diapers are folded on a collapsible suction plate having hinged sections corresponding to the folded portions of the diapers. At the completion of the folding operation each diaper is fed into the nip of a pair of suction discharge rolls. The suction of the rolls is arranged so that the folded diapers are successively discharged and stacked in alternate corners of an inverted packaging carton placed over the rolls.

3,685,819

SHEET DISTRIBUTING DEVICE

Fritz A. Deutsch, Euclid, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation of Ser. No. 779,522, Nov. 27, 1968, abandoned. This application March 17, 1971, Ser. No. 125,384
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **3 Claims**



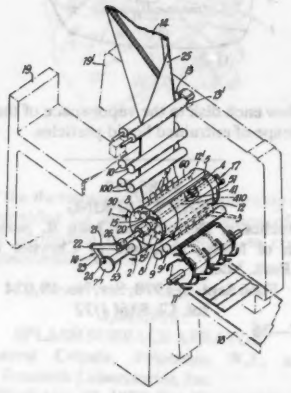
A device for distributing sheets of paper and the like including sheet conveying means and a movable deflector to direct the sheets from the conveying means into a receiving device. Drive means are also provided to move the conveying means and the deflector to convey the sheets to the receiving device. Counting means for controlling the count going to each pocket of a multiple pocket receiving device.

3,685,820

PRINTING PRESS FOLDERS

Louis M. Surbrook, Sale, England, assignor to Linotype and Machinery Limited, Altrincham, Cheshire, England

Filed April 13, 1970, Ser. No. 27,654
Int. Cl. B65h *45/16*
U.S. Cl. 270—76 **7 Claims**



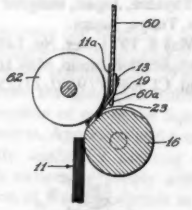
A flying tucker folder in which the tucker blades are carried by a shaft rotatably mounted on a folding drum which shaft is rotated by a sun and planetary gear arrangement, the sun gear being given an oscillatory motion to control the movement of the tucker blades into the nip of the folding rollers.

3,685,821

PRINTING PRESS FEEDER

Harold E. Paulson, 32 Island Road, St. Paul, Minn.

Filed Sept. 2, 1970, Ser. No. 68,819
Int. Cl. B65h *3/10*
U.S. Cl. 271—29 **9 Claims**



A mechanism for feeding envelopes and the like one at a time to a printing press is disclosed. A guide rack feeds a stack of envelopes onto the top of a hollow drum which is rotationally oscillated by a cam drive. A vacuum is maintained inside the drum and small holes in the drum attract the envelopes by means of suction. With each oscillation an envelope is picked up and carried into a set of transfer rollers which convey the envelope into the printing press.

3,685,822

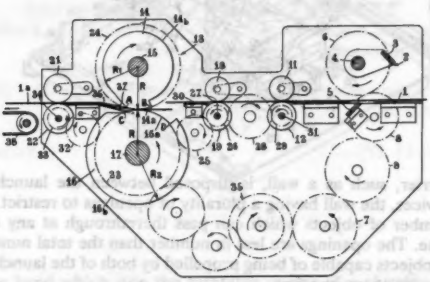
Patent Not Issued For This Number

3,685,823

APPARATUS FOR RECEIVING SHEETS CUT FROM A WEB

Louis Jean Chambon, Paris, France, assignor to Societe D'Etudes de Machines Speciales, Paris, France

Filed July 7, 1970, Ser. No. 52,788
Claims priority, application France, July 11, 1969, 6923774
Int. Cl. B65h 29/20
U.S. Cl. 271—80 4 Claims



This apparatus for receiving sheets cut from a web comprises only mechanical means for retarding and braking the successive cut sheets so that they overlap one another before being delivered.

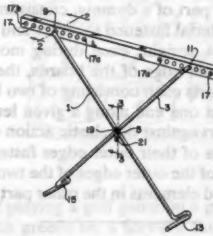
This apparatus comprises downstream of the rotary cutter at least one upper cylinder and a lower cylinder, said upper cylinder having on one portion of its outer peryphery at least one peripheral boss having a cylindrical contour, engageable in at least one recess of same radius formed in the lower cylinder.

3,685,824

TRAINING HURDLE

Governor V. Quinn, East St. Louis, Ill., assignor to Three-Line Research and Development Company, Granite City, Ill.

Filed March 10, 1971, Ser. No. 122,832
Int. Cl. A63k 3/04
U.S. Cl. 272—59 C 6 Claims



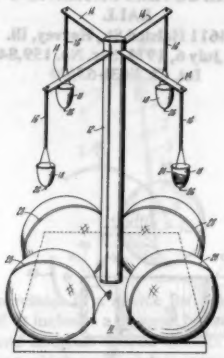
A training hurdle comprising a pair of legs pivoted to form an "X", with feet at the lower ends of the legs and pins at the upper ends of the legs received in openings in a crossbar. The bar has a plurality of openings and the legs are adapted to be pivoted to different angular positions for adjustment of the height of the crossbar. The bar is adapted to fall off the pins when struck by a hurdler.

3,685,825

BALLOON BURSTING GAME APPARATUS

Michael P. Dorazio, Vernon, Conn., assignor to John D. Del Ponti, Tolland, Conn., a part interest

Filed April 1, 1971, Ser. No. 130,231
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R 3 Claims



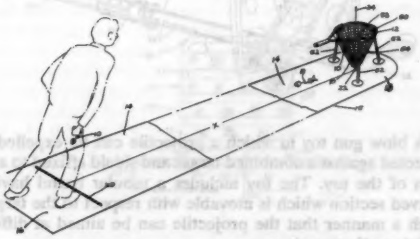
A game for bursting a toy balloon including a platform, for supporting a plurality of balloons, an upright standard centrally disposed on the platform, a plurality of receptacles adapted to receive playing pieces having a pointed lower element suspended above the platform in circumferential fashion about the upper end of the standard, and elastic supporting members securing the receptacles to the standard and being deformable to lower each receptacle against the toy balloon therebeneath in response to the weight of playing pieces in the receptacle.

3,685,826

GAME APPARATUS INCLUDING TARGET, PROJECTILE, AND PLAYING COURT

Kenneth W. Lehman, 7636 Adams Center Road, Fort Wayne, Ind.

Filed April 13, 1970, Ser. No. 27,836
Int. Cl. A63b 63/00
U.S. Cl. 273—95 R 6 Claims



A game apparatus comprising a court upon which the game is played, a goal and a missile. A player stands behind a boundary line on the court which is spaced from the goal and throws the missile at the goal. The missile comprises a head and a tail which are connected together in a manner to allow universal movement therebetween. In throwing the missile, the player grips the tail and throws the missile in an underhanded throwing motion. The missile can be thrown to follow trajectories ranging from a trajectory in which the head leads the tail throughout its path to the goal to a trajectory in which the head and tail tumble one over the other. A score is

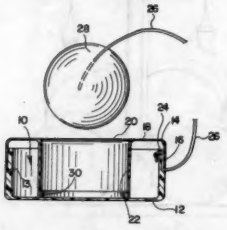
kept depending upon the final resting place of the missile, i.e., the missile within the goal, the head within the goal and the tail without the goal, the tail within the goal and the head without the goal, the missile without the goal.

3,685,827

RECEPTACLE HAVING A CYLINDRICAL TARGET OPENING IN THE COVER PORTION AND TETHERED BALL

Victor Petrusek, 14611 Halsted St., Harvey, Ill.

Filed July 6, 1971, Ser. No. 159,846
Int. Cl. A63b *63/00*
U.S. Cl. 273—98 **6 Claims**



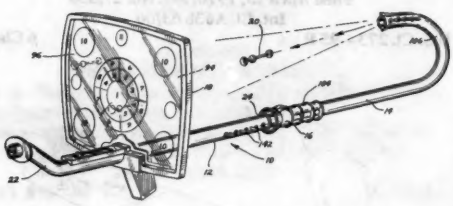
A toy having a ball attached to one end of an elastic cord and the other end of said cord anchored within a closable container, the cover of the container anchoring the said other end of the cord, and the cover having a cylindrical opening centrally thereof in which the ball is caught in using the toy.

3,685,828

BLOW GUN HAVING TARGET MOUNTED ON ITS BARREL

William F. Getgey, and Harry Meth, both of Cincinnati, Ohio, assignors to Rainbow Crafts, Inc.

Filed Sept. 4, 1970, Ser. No. 69,754
Int. Cl. F41b *1/00*
U.S. Cl. 273—101 **15 Claims**



A blow gun toy in which a projectile can be expelled and directed against a combined target and shield affixed to a portion of the toy. The toy includes a tubular barrel having a curved section which is movable with respect to the target in such a manner that the projectile can be aimed at different points on the target.

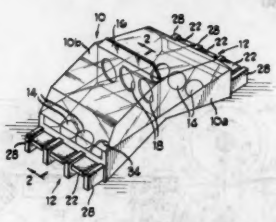
3,685,829

BALL LAUNCHING GAME HAVING COMMON TARGET APERTURES

Gordon A. Barlow, Evanston, Ill., assignor to Marvin Glass Associates

Filed Sept. 11, 1970, Ser. No. 71,544
Int. Cl. A63b *71/04*
U.S. Cl. 273—101 **5 Claims**

A skill type game which includes a pair of spaced launching devices selectively operable by individual players of the game for propelling a plurality of objects either individually or simultaneously outwardly therefrom toward the other launching device. Each launching device has positions for receiving a plurality of objects, such as spherical projectiles, the positions defining home positions for the other launching device whereby the object of the game may be to accumulate all of the objects at the other player's launching position. A



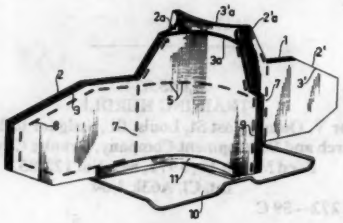
barrier, such as a wall, is disposed between the launching devices, the wall having a plurality of openings to restrict the number of objects which can pass therethrough at any one time. The openings are less in number than the total number of objects capable of being propelled by both of the launching devices at any one time.

3,685,830

TARGET-SHOOTING DUMMY

Karl Arne Holm, Stockholm, Sweden, assignor to Hammarplast AB, Tingsryd, Sweden

Filed June 1, 1970, Ser. No. 41,981
Claims priority, application Sweden, June 3, 1969, 7825/69
Int. Cl. F41j *1/02*
U.S. Cl. 273—102 R **4 Claims**



Target-shooting dummy formed of elastic and rigid board material allowing a part of a dummy, consisting of two board elements of the material fastened together and parallel to one another, to be kept upright, even during movement, by attachment to the lower edge of the boards, the dummy being composed of two parts each consisting of two board elements fastened together at one end along a given length and at the other end bent apart against the elastic action of the material, and with the insides of their outer edges fastened to the corresponding insides of the outer edges of the two corresponding and similarly treated elements in the other part of the dummy.

3,685,831

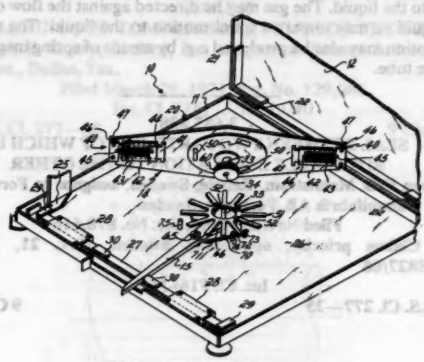
TOY WITH A ROTATING GAMEBOARD

Walter Kourt Walss, deceased, late of Midway, Ark. (by Margaret Walss, executrix)

Filed Jan. 20, 1970, Ser. No. 4,204
Int. Cl. A63f *1/18*
U.S. Cl. 273—142 JB **4 Claims**

A game toy having a rotating turntable holding a removable gameboard, the turntable being rotated and thereafter stopped in a precise position, the toy having a trigger operating through a disengageable gear train to effect rotation. The

turntable and the base with respect to which it rotates have cooperating magnets on the one hand and a spider on the



other hand which stop the turntable in one of a plurality of preselected equiangular positions.

3,685,832

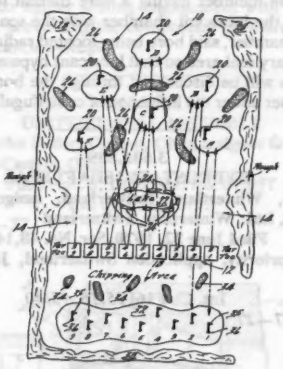
METHOD OF PLAYING A GOLF GAME

Theodore B. Johnson, 4512 Dixie Highway, P.O. Box 397, Drayton Plains, Mich.

Filed July 12, 1968, Ser. No. 744,476

Int. Cl. A63b *67/02*

U.S. Cl. 273—176 A **1 Claim**



A method of playing a golf game on a golf course which includes approach greens on a forward fairway, consecutively numbered teeing positions which are further identified as being the tee positions for holes having specified pars, a rearward putting area including a plurality of holes therein numbered to correspond with the consecutively numbered teeing positions, and conventional hazards forward and rearward of the teeing positions. The method of play involves the steps of hitting one ball forwardly for par-3 holes and two balls forwardly for par- 4 and par- 5 holes. Subsequent shots are hit rearward of the teeing positions and, for a par-5 hole, may involve putting the closer of a third and fourth ball hit to the putting area.

3,685,833

GOLF PUTTING PRACTICE DEVICE

William Jack, Jr., Redholme Fullerton Drive, West Kilbride, Ayrshire, Scotland

Filed Feb. 24, 1970, Ser. No. 13,626

Claims priority, application Great Britain, Feb. 22, 1969, 9,643/69

Int. Cl. A63b *69/36*

U.S. Cl. 273—176 FA **5 Claims**

The invention relates to a device for practising putting in the game of golf. It includes a channel having a ball-receiving station at one end and two spaced contact devices near the other end between which a golf club is swingable. The contact devices are connected electrically to a warning device so that if either is touched by a club swung between the contact devices the warning device is operated. Each contact device includes a rigid electrical conducting strip and a flexible strip of electrically conducting material held close to, but not touching, the rigid strip. Adjustment screws permit the distance between the contact devices to be varied.

3,685,834

Patent Not Issued For This Number

3,685,835

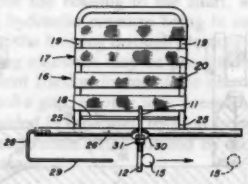
PUTTER TRAINING GUIDE

Robert Eaton Fahy, 501 N. Sunset Apt. 3405, Banning, Calif.

Continuation of Ser. No. 859,487, Sept. 19, 1969, abandoned. This application June 1, 1971, Ser. No. 148,937

Int. Cl. A63b *69/36*

U.S. Cl. 273—192 **1 Claim**

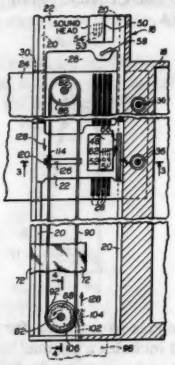


A straight cylindrical guide bar is horizontally supported about 9 inches from the ground level on a flat foot stand on which the traineee stands facing said bar with a putter club in his hands. Secured to the club shaft at right angles with the plane of the club head is a circular plate. With said plate allowed to rest by gravity rearwardly in constant sliding horizontal straight line contact with said guide the trainee practices putting a golf ball along a path forward from and parallel with said guide bar. A wire pointer adjustable mounted on one end of said guide bar is adjusted to overlie said path and assist the trainee in aligning himself and the apparatus with said path before putting.

3,685,836
RECORD CARD HOLDER AND ACOUSTICAL DEVICE

Maurice E. Chernowitz, 91 Payson Ave., New York, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,244
Int. Cl. G11b 5/00
U.S. Cl. 274—4 J 16 Claims

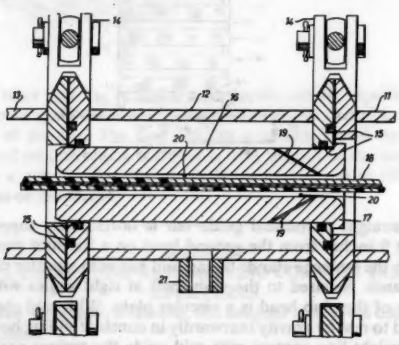


This sound recording and/or reproducing apparatus employs a card with a sound track having different channels extending parallel to an edge of the card and to each other. A sound head moves downward across the card and then in a reverse direction upward. One sound channel is effective on the down move of the sound head and a different one on the up move. A modification has a carriage that moves for a distance twice as great as the length of the sound track with multiple sound heads in positions to come over the different channels successively. Relative movement of the head and sound track can be motorized or can be manual and in accordance with a visible timer. Electric switches make different channels successively effective.

3,685,837
SEALING MEANS

William George Newell, The Glebe Bungalow, Stirchley, Telford, Shropshire, England

Filed April 28, 1970, Ser. No. 32,633
Claims priority, application Great Britain, May 6, 1969, 23,003/69
Int. Cl. F16j 15/14, 15/40
U.S. Cl. 277—1 18 Claims

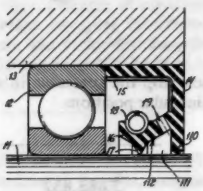


Method and device for sealing a continuous product, such as an electrical cable, passing between zones at different pressures during manufacture wherein a liquid such as water, is used to effect sealing, and turbulence is created in the liquid to reduce the dimensions of the seal, e.g. by passing a suitable gas or gas mixture, such as air, through the liquid. The device may be a tube through which the product passes and in which the liquid forms a seal between the product and the tube wall. The gas may pass through suitably directed holes in the tube wall into the liquid. The gas may be directed against the flow of the liquid or may impart a spiral motion to the liquid. The spiral motion may also be produced e.g. by means of spring inserts in the tube.

3,685,838
SEAL BETWEEN TWO PARTS, ONE OF WHICH IS ROTATABLE IN RELATION TO THE OTHER

Sven Erik Malmstrom, Reftele, Sweden, assignor to Forsheda Gummifabrik AB, Forsheda, Sweden

Filed Nov. 21, 1969, Ser. No. 878,616
Claims priority, application Sweden, Nov. 21, 1968, 15827/68
Int. Cl. F16j 15/16
U.S. Cl. 277—25 9 Claims

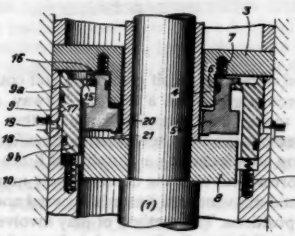


A seal for at least a pair of relatively rotatable members for preventing lubricant from leaking from a lubricant chamber to the space outside the lubricant chamber comprising a first seal element having a sealing portion mounted on the rotatable member and adapted to bear against a contact surface on the other member to form a primary seal area supporting the lubricant chamber from the space outside the lubricant chamber characterized by the first seal element mounted on the rotatable member having a bore therein forming a duct connecting the lubricant chamber with the space outside the lubricant chamber, said bore being located radially to one side of the primary seal area so that lubricant bypassing the primary seal area will be discharged through the bore to the lubricant chamber under the influence of centrifugal force.

3,685,839
HYDROSTATIC SHAFT SEAL

Arno Frei, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed June 22, 1970, Ser. No. 48,141
Claims priority, application Switzerland, June 25, 1969, 9702/69
Int. Cl. F16j 15/16, 15/40
U.S. Cl. 277—27 11 Claims



The seal includes a non-rotatable axially movable sealing member which is biased to move toward a collar fixed to the rotating shaft. The sealing member is moved away from the

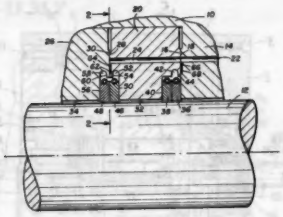
collar at start-up, by a spring loaded plunger. The plunger is biased by springs which are effective so long as a predetermined differential pressure exists across the plunger.

3,685,840

PACKING FOR COMPRESSORS, PUMPS OR THE LIKE

Ralph E. Henry, Rixford, Pa., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed March 29, 1971, Ser. No. 129,066
Int. Cl. F16j *15/16, 15/40*
U.S. Cl. 277—28 **9 Claims**



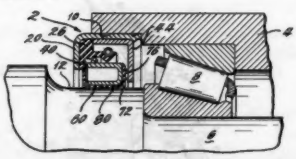
The improved packing rings described in detail hereinafter provide an integrally formed, internally located check valve for use in the lubrication systems compressors, pumps or the like. Specifically, and in the preferred form, two adjacent packing rings include face portions arranged in sealing engagement with at least one of the packing rings a lubricant passageway therein. An arcuate groove is formed in the face of one of the packing rings in communication with the lubricant passageway. One of the packing rings includes a pressure-responsive, integrally formed annular lip that encompasses the arcuate groove. The arrangement is such that a predetermined pressure in the lubricant groove moves the lip away from the adjacent packing ring permitting lubricant to pass out of the arcuate groove into the interior of the compressor. During the compression stroke of the compressor, the high pressure existing inside the compressor acts on the pressure responsive lip forcing it into tighter sealing engagement with the adjacent packing ring preventing the compressor pressure from entering the lubrication system.

3,685,841

UNITIZED SEAL ASSEMBLY

Thomas Charles Keller, Canton, Ohio, assignor to The Timken Company, Canton, Ohio

Filed Nov. 5, 1970, Ser. No. 87,057
Int. Cl. F16j *15/32*
U.S. Cl. 277—37 **12 Claims**



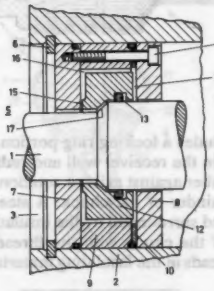
A unitized seal assembly includes a seal case having a pair of spaced retaining walls between which a wear ring is disposed. The wear ring fits over a shaft and has spaced inner and outer walls joined by a connecting wall located adjacent to one of the retaining walls. The spacing between the inner and outer walls permits air to circulate freely along the outer wall to dissipate heat therefrom. A bumper ring is bonded to the connecting wall, and it has a plurality of circumferentially spaced bumper pads which project toward and are located opposite to one of the retaining walls. An elastomeric seal element is bonded to the opposite retaining wall, and it has sealing lips which engage the outer wall of the wear ring. The seal element also has a bumper ring provided with circumferentially spaced bumper pads which are positioned opposite the end edge of the outer wall on the wear ring. Thus, the two sets of bumper pads maintain the wear ring centered in the seal case as the seal assembly is installed in a housing or on a shaft.

3,685,842

HYDROSTATIC SHAFT SEAL

Ivan Jaroslav Cyphelly, 8128 Hinteregg, Switzerland

Filed Oct. 9, 1970, Ser. No. 79,541
Claims priority, application Switzerland, Oct. 13, 1969, 15331/69; Aug. 12, 1970, 12116/70
Int. Cl. B65d *53/00*; F16j *15/16*
U.S. Cl. 277—74 **6 Claims**



A hydrostatic shaft seal for a rotatable shaft extending through an opening in a housing includes a seal ring substantially enclosed in a seal ring casing seated in the housing opening, operating choke gaps being provided between opposite axial end surfaces of the seal ring and adjacent portions of the casing. One of these gaps is in communication with a space containing hydraulic operating fluid under pressure, and the other gap is in communication with a relatively low-pressure space. The two gaps are connected in series to open and close in opposition. The area of the axial end face of the seal ring facing toward the lower-pressure space is larger than the area of the axial end surface of the seal ring facing toward the space under operating hydraulic pressure. Elastic seal elements are provided between the seal ring and the shaft to provide for relative axial displacement of the seal ring under the oppositedly acting hydraulic pressures. The seal ring may be a single element or may be a two-part element, and the hydrostatic shaft seal may be designed for feeding through of a pressure medium from the housing to the shaft, with the space under operating hydraulic pressure being in communication with the shaft and the housing through pressure medium lines. Banjo-type feeding elements may be provided to reduce the diameter-dependent friction forces of the elastic seal means, and a further choke gap, serving as a pressure area limiting gap, may be provided in separated relation from an operating choke gap, the separation being formed by an annular slot-shaped pressure space.

3,685,843

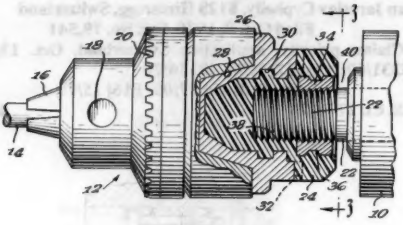
INSULATED CHUCK

Anthony Jacyno, Aurora, Ill., assignor to G. W. Murphy Industries, Inc., Portable Electric Tools Division

Filed Jan. 12, 1970, Ser. No. 2,333
Int. Cl. B23b *31/04*
U.S. Cl. 279—1 R **17 Claims**

An insulated chuck is provided for a motor driven tool such as a portable electric drill. The chuck can be mounted on a spindle driven by the motor of the drill and its tool holding jaws separated from the motor driven spindle by an electrical insulating member which blocks passage of electrical current between the tool holding jaws of the chuck and the motor

and/or user. In the preferred form as described, the insulating member is integrally molded partly within a receiver opening toward the proximal end of the chuck and the member completely surrounds the threaded end of the motor driven spindle. The insulating member extends to the outermost edge of the chuck at the proximal or spindle receiving end thereof and is internally threaded to receive the spindle. The insulating member includes a locking ring portion extending into an annular groove in the receiver wall and radial locking ribs for locking the member against axial or rotational movement relative to the remainder of the chuck. A steel nut is imbedded and locked in and surrounded by the insulating material at the proximal end of the chuck with the threads of the nut contiguous with threads in the insulating material.



3,685,844

WORKPIECE HOLDERS

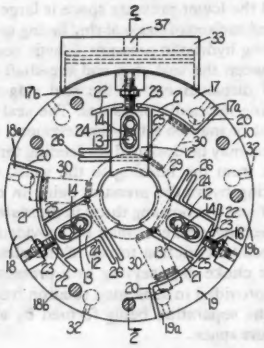
Alfred Ernest Sykes, 329 Leicester Road, Markfield, England

Filed April 23, 1970, Ser. No. 31,151

Claims priority, application Great Britain, April 29, 1969, 21846/69

Int. Cl. B23b *31/10, 31/18, 31/30*

U.S. Cl. 279—4 **5 Claims**



A workpiece holder in which a body formed of resilient material has a plurality of workpiece engaging members, at least one of the members being connected to a free end portion of finger, with the finger being integrally connected to the body at the opposite end portion whereby the free end portion of the finger and the member connected thereto can flex relative to the body about its integrally connected end portion so as to be movable in inward and outward directions. Means are also provided to apply a force to said free end portion for moving it and the member in one of such directions while the resilience of the body material will effect movement of such components in the opposite direction.

3,685,845

CHUCKING DEVICE FOR MACHINE TOOLS

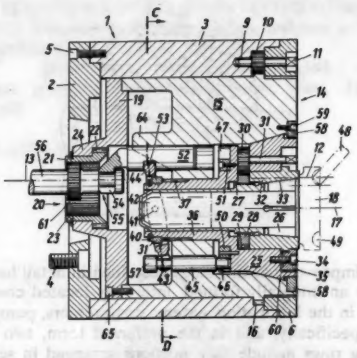
David Fischer, Mainaschaff; Rudolf Kohler, Stockstadt; Hugo Roos, and Joachim Merker, both of Rottenburg, all of Germany, assignors to Huller Rottenburg Gesellschaft mit beschrankter Haftung, Rottenburg, Germany

Filed May 11, 1970, Ser. No. 35,971

Claims priority, application Germany, May 13, 1969, P 19 24 321.1

Int. Cl. B23b *31/36*

U.S. Cl. 279—5 **22 Claims**



A chucking device in which a body part is supported for rotation on an axis and has an inner support member rotatable in the body part on an axis parallel to and spaced radially from the axis of the body part. A chuck is rotatably mounted in the inner support member on an axis parallel to and radially spaced from the axis of the support member. The support member can be clamped to the body part in rotated positions thereof while the chuck is indexable in the support member and can be arrested in indexed positions thereof.

3,685,846

SKI

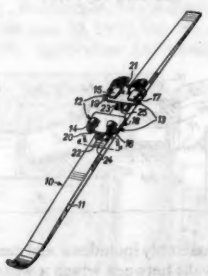
Hans Schmid, 3, Dornliacker Schlieren, Zurich, Switzerland

Filed Feb. 19, 1970, Ser. No. 12,641

Claims priority, application Switzerland, Feb. 20, 1969, 2597/69

Int. Cl. A63c *5/00*

U.S. Cl. 280—11.13 W **12 Claims**



A ski of the kind in which a single ski body member formed with a gliding surface is provided with two ski bindings fixed to said body member in side by side arrangement. This ski can also be called monoski since the person using the ski stands on a single gliding surface. The two ski bindings comprise each a toe portion and a heel portion. The toe and heel portions are each mounted on a distinct support, and the two supports for each ski binding are fixed one behind the other in longitu-

dinally spaced relation on the ski body member provided with the gliding surface.

3,685,847

TENSION CONTROL FOR SKI BINDINGS

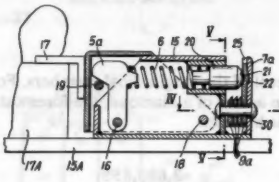
Thomas G. Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Wiener Metallwarenfabrik Smolka & Co., Wien-Mauer, Austria

Filed April 6, 1970, Ser. No. 25,650

Claims priority, application Austria, April 9, 1969, A 3454/69

Int. Cl. A63c 9/00, 9/08, 9/24

U.S. Cl. 280—11.35 T 5 Claims



Adjustable tensioning means for mechanical parts, particularly ski bindings. In a mechanical device such as a releasable ski binding having a backing abutment at one end thereof and an anchoring or locating means at the other end thereof, variation in tension can be provided by locating one or more inserts, such as washers, between the spring and either the abutment or the locating or anchoring means. Such washers are, in this invention, provided with nesting contours such that the washers can be inserted into or released from operating position only by partial retraction of the spring and axial movement of the washer. In some embodiments the inserts are movable mounted for insertion or removal by a lateral motion.

3,685,848

Patent Not Issued For This Number

3,685,849

TOE IRON FOR SAFETY SKI BINDINGS

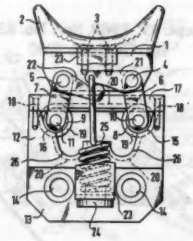
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, and Roland Jungkind, Gaptenstrasse 17, 8105 Farchant, both of Germany, said Marker, assignor to said jungkind; part interest

Filed Sept. 16, 1970, Ser. No. 72,717

Claims priority, application Germany, Sept. 29, 1969, P 19 49 123.7

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 T 5 Claims



A soleholder constitutes the coupling member of a four-bar linkage, which comprises levers pivoted to a baseplate and which is held in its normal position by a spring. The baseplate is provided with fixed abutments, which in the normal position of the toe iron are engaged by the levers at those ends thereof which do not carry the soleholder. Each abutment has a concave abutting surface, which at its mutually opposite sides adjoins a recess, which is capable after a spring-opposed movement of the soleholder to receive that lever which leads in the direction of movement so that so the soleholder can be pivotally moved to its open position without an effort.

3,685,850

SAFETY HANDLE FOR A SKI POLE AND SAFETY KNOB FOR SUCH HANDLE

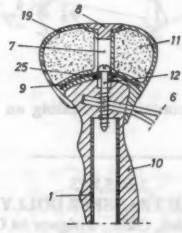
Alfred Anton Franz Kepka, and Herwig Guenther Kepka, both of Hubnerstrasse 11, Munich, Germany

Filed Nov. 24, 1969, Ser. No. 879,402

Claims priority, application Germany, Nov. 22, 1968, P 18 10 332.7; June 14, 1969, P 19 30 421.3

Int. Cl. A63c 11/22

U.S. Cl. 280—11.37 H 1 Claim



The present invention relates to a safety handle for a ski pole and a safety knob for such handle, wherein said knob has a buffer body of elastic material, said body having at least one substantially elliptical cross-sectional area extending perpendicularly to the longitudinal axis of the ski pole. The safety knob is provided with means for attachment to the upper end of a conventional ski pole handle or the knob and the handle are constructed as an integral unit. In the latter instance the safety knob portion of the handle also comprises means for attaching the integral unit to the top of the ski pole.

3,685,851

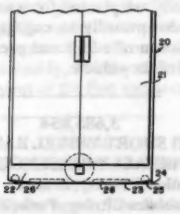
MOBILE CABINET

Hammond A. Berry, Spring Lake, Mich., assignor to E. H. Sheldon and Company, Muskegon, Mich.

Filed April 27, 1970, Ser. No. 31,886

Int. Cl. B62d 33/08

U.S. Cl. 280—43.22 4 Claims



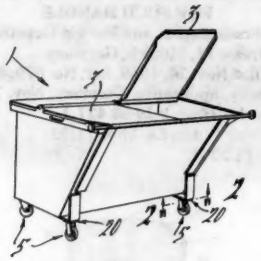
A cabinet or support structure is equipped with a pair of large wheels mounted on wheel hubs that are eccentrically supported upon an axle, the axle being rotatable to raise the wheel hubs and thereby the wheels so that the bottom of the cabinet can seat on the floor or floor carpet, and when the axle is rotated to lower the hubs, the cabinet can then be moved on the large wheels together with edge-supported casters. Means are provided for rotating the axle and locking it in adjusted positions.

3,685,852

REFUSE DISPOSAL CONTAINER AND MOUNTING DEVICE

Clarence F. Wendorf, 108 Florida Ave., W. Wyoming, Pa., and W. Glen Hicks, Country Club Road, Dallas, Pa.

Filed Sept. 2, 1970, Ser. No. 68,865
Int. Cl. B62b 5/00
U.S. Cl. 280—79.2 1 Claim



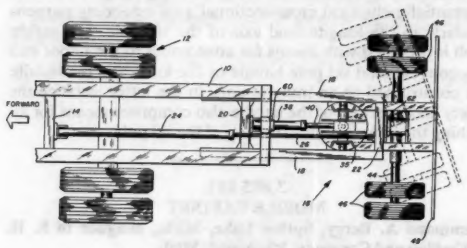
A refuse disposal container including an improved caster mounting assembly.

3,685,853

LOAD TRANSFER DOLLY

Ave S. Goldsmith, Tulsa, Okla., assignor to CCI Corporation, Tulsa, Okla.

Filed Jan. 16, 1970, Ser. No. 3,404
Int. Cl. B60s 9/00; B60p 3/16
U.S. Cl. 280—81 R 6 Claims



Axle vehicle loads are transferred or equalized utilizing a wheeled dolly to create a variable wheelbase which is adapted to be moved from a retracted position on the basic vehicle frame to a maximum outward position. The axle and wheels of the load transfer dolly are pivoted from an inoperative, above-the-road position downwardly to engagement with the road and, by the application of additional pressure, will take up a portion of the load of the vehicle.

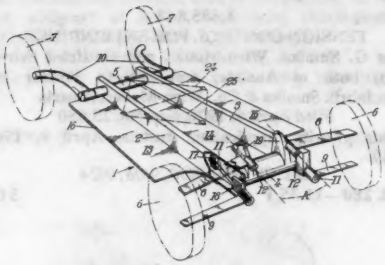
3,685,854

VEHICLES WITH SHORT WHEEL BASE AND OF SMALL BULK, ESPECIALLY PASSENGER VEHICLES

Jean-Georges Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed April 14, 1970, Ser. No. 28,346
Claims priority, application France, April 16, 1969, 6911862
Int. Cl. B62d 21/00
U.S. Cl. 280—106.5 R 14 Claims

The vehicle has a chassis including at least in its front part two longitudinal members of hollow cross section dividing the width of the vehicle into three parallel equal parts. The front wheels at least are independent and are attached to longitudinal torsion bars downwardly inclined from the rear to the front. The rear upper portions of the torsion bars are housed in the longitudinal members. The major portion of the floor is



at the lower level of the longitudinal members. Four seats are arranged at the apices of a diamond, the foremost seat for the driver being the highest.

3,685,855

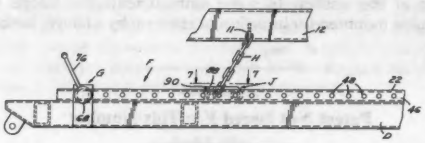
Patent Not Issued For This Number

3,685,856

VEHICLE TIE-DOWN FOR HAUL-AWAY TRAILERS

Donald J. Blunden, Southfield, Mich., assignor to Whitehead & Kales Company, River Rouge, Mich.

Filed March 5, 1971, Ser. No. 121,476
Int. Cl. B61d 45/00
U.S. Cl. 280—179 A 10 Claims



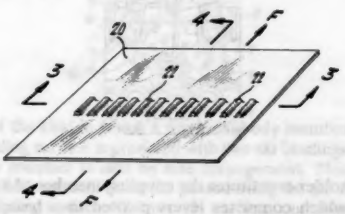
A vehicle tie-down structure for securing a vehicle upon the deck of a haul-away trailer, comprising a flexible element adapted to be connected to the vehicle and a ratchet shaft for tensioning the flexible element. A carriage is locked in adjusted position to a channel anchored lengthwise upon the deck. The carriage has a guide portion engaging the flexible element between the ratchet shaft and the vehicle to determine the direction of the tension applied to the vehicle.

3,685,857

BOOKBINDING

Ernest William Schlieben, Morrisville, Pa., assignor to RCA Corporation

Filed Sept. 19, 1969, Ser. No. 859,508
Int. Cl. B42b 5/00
U.S. Cl. 281—26 2 Claims



A stack of printed sheets, ready for binding, is formed with a plurality of grooves across the edge thereof to be bound. An

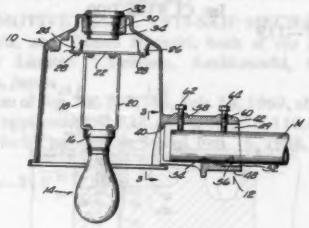
elastic member, formed with a like plurality of projecting ridges, is subjected to a force which contracts the ridges to a size sufficient to enable them to be fitted within the grooves. Upon removal of the force from the elastic member, the ridges revert toward their original configuration causing them to be lodged within the grooves thereby securing the stack of sheets as an assemblage.

3,685,858

MOUNTING ARRANGEMENT FOR LUMINAIRES

Donald Wandler, South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Filed Nov. 30, 1970, Ser. No. 93,590
Int. Cl. F16l *21/00*
U.S. Cl. 285—27 **5 Claims**



A luminaire has a one piece hood and slip fitter arrangement. The slip fitter includes a lower wall having a pair of laterally spaced ribs leading to a bearing surface intended to engage a luminaire support arm when the later is received in the slip fitter. Two mounting screws are located in an upper portion of the slip fitter in spaced relation above but one on either side of the bearing surface. The luminaire support arm is clamped between the screws and bearing surface in mounting the luminaires. The flip fitter upper portion, ribs, and bearing surface are integral with each other as well as with the hood.

3,685,859

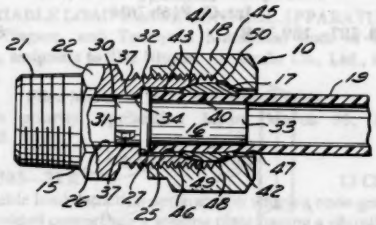
Patent Not Issued For This Number

3,685,860

HOSE COUPLING

Adam M. Schmidt, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Jan. 5, 1971, Ser. No. 104,029
Int. Cl. F16l *33/00*
U.S. Cl. 285—249 **6 Claims**



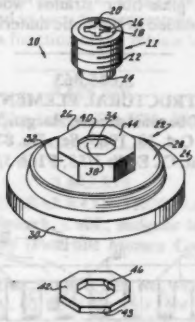
A compression type end fitting assembly for flexible tubing comprising body, nut, and sleeve assembly parts, and a tube reinforcing insert positionable in the body, before joinder of the tubing and the fitting, to simplify final assembly procedures. The insert is releasably retained in the body to permit the tube to be disassembled from the body upon release of the insert when the tube and insert are interlocked by compression of the sleeve. A deformable tubular insert design permits the insert to be secured by an adequate interference fit in a bore of the body and to be readily released therefrom regardless of relatively large dimensional variations in manufacture.

3,685,861

COUPLING MEMBER FOR AUTOMATIC TRANSMISSION DEVICES

George M. Karel, Forest Hills, N.Y., assignor to All-O-Matic Manufacturing Corporation, New Hyde Park, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,782
Int. Cl. F16l *13/14*
U.S. Cl. 285—382 **2 Claims**



A coupling member used as a connecting cap for a valve modulator in the transmission system of an automobile comprises a first member composed of a comparatively thin-walled material and comprising a flanged part adapted to be joined to the valve and a nut means formed in the flanged part and extending out therefrom. A second member formed of a comparatively thick-walled material is operatively rigidly attached to the first member, and projects outwardly therefrom substantially coaxially with the nut means. This second member is generally in the form of a threaded bolt which is rotated into a secured engagement with an external valve in the transmission system by an application of a torsional force to the nut means. In the preferred embodiment the nut means is provided with an aperture passing therethrough, and a portion of the bolt engages the nut means adjacent the inner end of the aperture, thereby to prevent the first and second members from separating. The aperture is preferably non-circular and the bolt which passes therethrough is correspondingly non-circular in the assembly, thereby defining a means for the interlocking engagement of the first and second members.

3,685,862

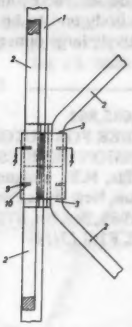
CONNECTION FOR GLASS FIBER REINFORCED RODS OR THE LIKE

Artur Rudolf, Biebelshoferweg 2, Hermesdorf-Waldbrol, Germany

Filed July 15, 1972, Ser. No. 55,088
Claims priority, application Germany, July 19, 1969, P 19 36 903.0; June 13, 1970, P 20 29 263.1
Int. Cl. F16b *2/14, 7/04*
U.S. Cl. 287—20.92 G **14 Claims**

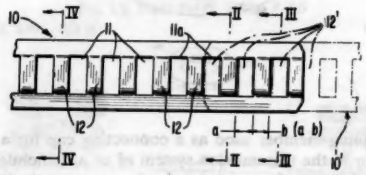
A connection of rods, particularly for the erection of static constructions as braced mast, grid carrier, or the like, which comprises a plurality of main carriers and connecting rods, a driven wedge means clamping to each other faces of said rods

pointing to each other, a hoop assuming the reaction force of said wedge, and receiving the parts to be connected, and said



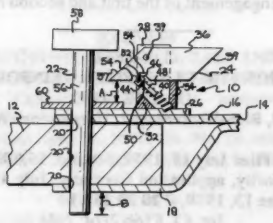
hoop comprising glass-fiber strands wound in peripheral direction and embedded in synthetic material.

3,685,863
STRUCTURAL ELEMENTS
Hans Oetiker, 21 Oberdorfstrasse, Horgen, Switzerland
Filed Oct. 30, 1969, Ser. No. 872,702
Int. Cl. E04b 1/58; F16b 5/07
U.S. Cl. 287—65 **29 Claims**



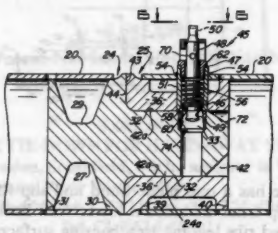
Structural elements adapted to be connected with each other into structural units by the form-locking engagement of complementary parts constituted by apertures and projections, and form-lockingly as well as force-lockingly secured in their assembled positions by locking members engaging the structural elements on several sides.

3,685,864
LOCKING PIN COUPLING
Robert M. Hall, R.R. 4, Sidney, Ohio
Filed March 22, 1971, Ser. No. 126,430
Int. Cl. F16c 11/00
U.S. Cl. 287—100 **6 Claims**



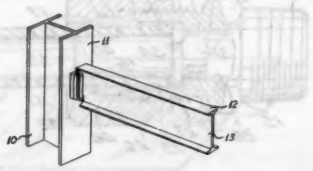
A coupling device is provided which is well suited for locking two members together where it is desired to have limited pivotal movement between the members being coupled, such as farm equipment. This coupling device features a unique safety lock pin which incorporates an integral retaining disk formed at a location along the length of the pin and which is spaced from a head or handle portion at one end of the pin. The coupling device further includes a spring-loaded latch which is pivotally mounted on one of the members to be coupled and is adapted to automatically engage the retaining disk to hold the members in coupled relationship when the safety lock pin is inserted through aligned openings in the members. The spring-loaded latch is pivotable against a spring to release the safety lock pin when it is desired to retract the safety lock pin and uncouple the members being coupled.

3,685,865
LOCKING DEVICE FOR AUGER LATCHES
William G. Young, Salem, Ohio, assignor to The Salem Tool Company, Salem, Ohio
Filed Dec. 16, 1970, Ser. No. 98,558
Int. Cl. F16b 7/00
U.S. Cl. 287—119 **17 Claims**



Apparatus for connecting the locking auger sections end to end in a string of auger sections driven by an auger mining machine. Auger sections are connected end to end by inserting a shank portion of one section into a socket portion of the adjacent section and locking them by a latch bolt. The latch bolt is carried in a housing on the socket portion of one section and extends into a hole in the shank portion of the other section. The latch bolt carries a transverse locking pin and is rotatable in the housing to position the locking pin in one of two slots in the housing. One slot is of longer length axially of the bolt to permit the latch bolt to be withdrawn from the hole in the shank portion, while the other slot prevents the withdrawal of the latch bolt. The auger sections remain locked together until the latch bolt is intentionally turned to a position where the pin is in the longer slot, and the bolt is then intentionally drawn out of the shank hole.

3,685,866
CONNECTOR FOR STRUCTURAL STEEL
Wilfrid J. Patenaude, 12 de Saverne, Lorraine, Quebec, Canada
Filed April 15, 1970, Ser. No. 28,681
Int. Cl. F16b 7/04
U.S. Cl. 287—189.36 R **6 Claims**



A connector assembly for joining structural steel members together to form a structure. The features of the invention are:

a. a support piece for rigid connection of a rear surface thereof to a vertical face of a first structural steel member, said support piece having a pair of outwardly

projecting side walls defining first surfaces that converge outwardly to form a frontal slot therebetween and also converge downwardly to cause said slot to become a retaining socket, said support piece also having a first face inclined downwardly and outwardly; and

b. a wedge piece for rigid connection of a rear surface thereof to an end of a second structural steel member and for interlocking engagement with said socket, said wedge piece having a pair of side walls defining second surfaces that diverge outwardly and converge downwardly to mate with said first surfaces in a wedging action preventing relative lateral movement between said pieces, said wedge piece also including a second face inclined downwardly and inwardly to mate with said first face whereby to hold the wedge piece firmly in said support piece against relative longitudinal movement.

3,685,867

AUTOMOTIVE WHEEL ANTI-SKID MECHANISM

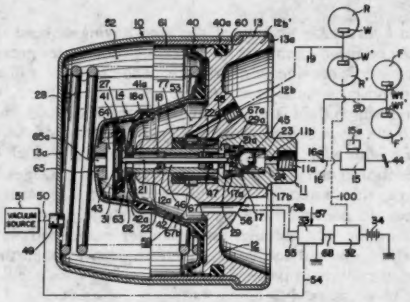
Masmi Inada, and Tatsuo Hayashi, both of c/o Aisin Seiki Company Limited 1,2-chome, Asahi-machi, Kariya-shi, Aichi-ken, Japan

Continuation of Ser. No. 797,746, Feb. 10, 1969, abandoned. This application Jan. 28, 1971, Ser. No. 110,602

Claims priority, application Japan, Feb. 10, 1968, 43/8463

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **3 Claims**



An anti-skid device operating in conjunction with the hydraulic service brakes of an automobile for sensing an impending skid condition and controlling the application of hydraulic pressure to the wheel brake cylinders to prevent the vehicle from skidding. The present invention utilizes a vacuum operated pressure modulator acting in conjunction with the hydraulic brake system to reduce and modulate the hydraulic pressure applied to the wheel brake cylinders in response to a signal generated by a wheel skid sensing device.

3,685,868

VARIABLE LOAD BRAKE CONTROL APPARATUS

Minoru Nagase, and Toshiyuki Matsuoka, both of Kobe, Japan, assignors to The Nippon Air Brake Co., Ltd., Kobe, Japan

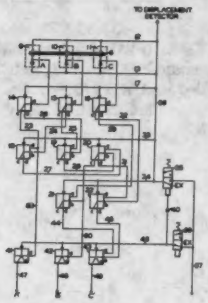
Filed March 8, 1971, Ser. No. 122,048

Claims priority, application Japan, March 10, 1970, 45/20245

Int. Cl. B60t *8/20*

U.S. Cl. 303—22 R **13 Claims**

A variable load detection apparatus in which a code generator is provided comprising a sensing plate having a plurality of openings arranged to quantify the sensing plate to provide a plurality of code stages and a plurality of jet sensors adapted to detect different code stages resulting from displacement of the sensing plate incident to varying load conditions. The sensing plate openings are arranged to cause the jet sensors to generate a binary-weighted gray code which is converted by encoder circuitry into standard binary-weighted code form. The encoder outputs are connected to pilot different ones of a plurality of interface valves comprising a power stage for driving a differential diaphragm-type relay valve which may be advantageously utilized to vary the percentage of brake pressure on a rail vehicle as a function of the vehicle load condition.



3,685,869

Patent Not Issued For This Number

3,685,870

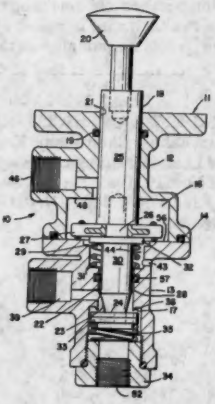
SPRING BRAKE CONTROL VALVE

James R. Jensen, Newark, Calif., assignor to Pacific Car and Foundry Company (Peterbilt Motors Company Division), Renton, Wash.

Filed Dec. 2, 1970, Ser. No. 94,460

Int. Cl. B60t *13/22, 11/34*

U.S. Cl. 303—71 **6 Claims**



A single valve means is provided to control air-operated spring brakes. One rod operates two valve elements or discs spaced from each other, one valve element automatically acting to seal off the service air line upon failure of service air pressure, and the other valve element controlling air pressure from a protected air tank to the spring brake units. Both valve elements are spring-biased and are operated by the rod and partly by the service air and protected tank pressures, respectively. When service air pressure fails, the rod and first valve move upwardly, cutting off the service air line and opening the spring brake line to the atmosphere, reducing pressure thereon so as to cause application of the brakes. Simultaneously, upon upward motion of the rod, the second valve closes off the spring brake line from the air pressure from the pro-

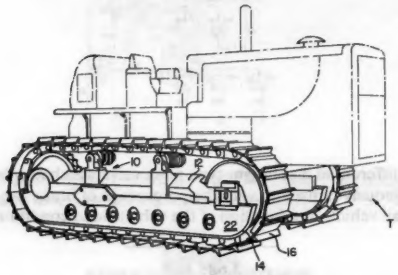
tected tank, bleeding pressure to the atmosphere from the spring brake line. The brakes can then only be released by repair or by manually holding the rod down in driving position.

3,685,871

TRACK ROLLER ASSEMBLY

Kenneth C. Foreman, P.O. Box 271, Ketchikan, Alaska

Filed Sept. 8, 1970, Ser. No. 70,134
Int. Cl. B62d 55/14
U.S. Cl. 305—28 7 Claims



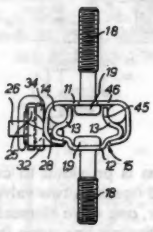
A track roller assembly is secured between spaced roller mounting members. The track roller assembly includes a shaft having a head and an end both of which are hexagonal and are received in hexagonal openings of outer and inner ring members secured to the mounting members. The opening receiving the head is provided with diametrically-opposed semi-circular threaded apertures. The head of the shaft is also provided with diametrically-opposed semi-circular threaded apertures which are alignable with the apertures in the hexagonal opening. Fasteners are then threaded into the aligned apertures to hold the shaft in position between the mounting members. A bearing circumscribes the shaft and is bolted at one end to the outer ring member. A roller is mounted on the bearing.

3,685,872

SLIDE FOR A VEHICLE SEAT

Frederick William Babbs, Nottingham, England, assignor to Cox of Watford Limited, Nottingham, England

Filed Nov. 19, 1969, Ser. No. 878,043
Int. Cl. F16c 29/00; B60r 21/10; G05g 5/06
U.S. Cl. 308—6 R 14 Claims



This invention is a fore and aft adjustable seat slide for a motor car seat in which balls act between the sides of respective channel members so that the tops of the channel members do not co-operate with the balls and are free for fixing means for the channels and for deformation to give good surface-to-surface contact between the channels under the excessive loads experienced in a crash.

3,685,873

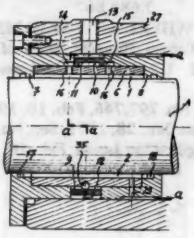
Patent Not Issued For This Number

3,685,874

METHOD OF CENTERING A SHAFT IN A BEARING AND HYDROSTATIC BEARING WITH HIGH RIGIDITY FOR CARRYING OUT THIS METHOD

Paul Gerard, Versailles, France, assignor to Agence Nationale de Valorisation de La Recherche Tour Aurore, Paris, France

Filed Oct. 6, 1970, Ser. No. 78,436
Claims priority, application France, Oct. 10, 1969, 6934668
Int. Cl. F16c 17/16
U.S. Cl. 308—9 22 Claims



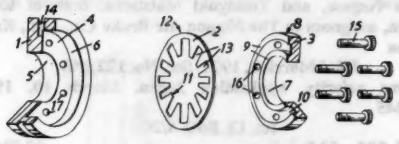
In a hydrostatic bearing of the kind having at least three radially opposed chambers for receiving fluid under pressure, the invention provides a distributor in the form of a floating ring disposed around the shaft but rotationally fixed, ways through which fluid is selectively fed to the chambers, the inlets to the ways being controlled by the position of the ring, cavities with walls afforded by the ring and from which fluid passes to the inlets of the ways, and calibrated passages leading from the source of fluid under pressure to the respective cavities. In use when the shaft moves laterally towards any chamber the flow through that chamber is reduced and the pressure increased so that the pressure drop through the associated calibrated passage is correspondingly reduced. This leads to pressure differences between the cavities and consequent movement of the ring so as to impede the reduction of fluid supply to any chambers in which the pressure increases.

3,685,875

BEARING MEMBER

Colin William Dee, Greenacres, 34 Canford Bottom, Wimborne, Dorset, England

Filed Nov. 12, 1970, Ser. No. 88,663
Claims priority, application Great Britain, Oct. 9, 1970, 48,122/70
Int. Cl. F16c 17/16
U.S. Cl. 308—9 2 Claims



A bearing member, for use in an externally pressurized fluid bearing capable of operation without design change on gases, vapors and liquids, of that kind in which a body-of-rotation bearing gap is defined between a bearing surface of a first relatively rotatable bearing member and an opposed bearing surface of a second relatively rotatable bearing member, has first and second elements each with the bearing surface thereon,

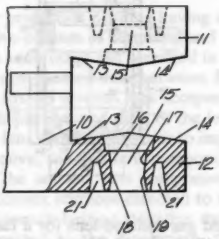
said elements each including a respective one of a pair of opposed contact faces. Spacer means, e.g., a shim, having opposed major faces is disposed between the elements such that each of its major faces abuts in fluid-tight sealing engagement with the contact face of a respective one of the elements, the contact faces and the spacer means defining at least one fluid feed passage opening at one end adjacent to the bearing surface of the bearing member.

3,685,876

PIVOT PIN BEARING FOR USE IN PLASTIC PIANO ACTIONS AND THE LIKE

Walter E. Dietrich, Cincinnati, Ohio, assignor to D. H. Baldwin Company, Cincinnati, Ohio

Filed June 21, 1971, Ser. No. 154,760
Int. Cl. F16c *17/02, 33/20*
U.S. Cl. 308—37 **15 Claims**



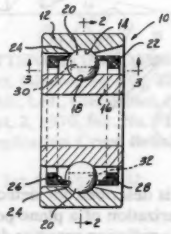
A plastic member having a pivot pin bearing constituted by a hole of polygonal cross-section is disclosed. Parallel to each side of said polygonal hole and spaced slightly outwardly therefrom, there is a cavity or relief in said member to provide a capability for sufficient deflection of said sides to compensate for small dimensional variations. Since the two ends of each side are fixed, the stiffness of the bearing is maintained so as to minimize the tendency of a part pivoted in said bearing to vibrate when off-center forces are applied.

3,685,877

BALL CAGE

Robert J. Gould, Brookfield, Conn., assignor to The Barden Corporation, Danbury, Conn.

Filed Jan. 19, 1971, Ser. No. 107,756
Int. Cl. F16c *19/20, 33/38*
U.S. Cl. 308—201 **5 Claims**



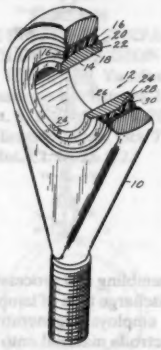
An improved ball-bearing cage comprising an annular body formed with radially-extending ball pockets in which material is removed in an axial direction at the sides of the pockets adjacent to the locus of the ball centers to cause the balls to contact the remainder of the pocket wall in the fore-and-aft direction of rolling movement thus reducing ball-to-cage contact area and side shear area.

3,685,878

BEARING CONSTRUCTION

Stanley S. Orkin, Rockville, Conn., assignor to KAcarb Products Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 792,183, Nov. 20, 1968, Pat. No. 3,535,005, which is a continuation-in-part of Ser. No. 582,894, Sept. 29, 1966, abandoned, which is a continuation-in-part of Ser. No. 542,417, April 13, 1966, Pat. No. 3,428,374. This application May 25, 1970, Ser. No. 40,200
Int. Cl. F16c *33/04*
U.S. Cl. 308—238 **2 Claims**



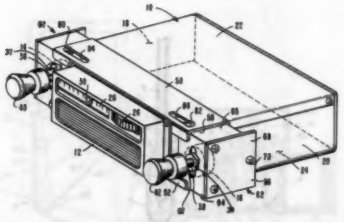
A plain dry bearing consists of two relatively movable members, one providing a rubbing bearing surface made of at least in part a solid organic lubricant material and the other providing a rubbing bearing surface made of a thin ceramic coating on a metal substrate. The ceramic coating is sufficiently thin, less than 0.010 of an inch, that it may deform under load and transfer stresses to the metal substrate, thereby reducing the possibility of fracturing and spalling the coating and producing a bearing having both the low wear property of the ceramic coating and the high load carrying capability of the metal substrate.

3,685,879

RADIO APPARATUS WITH ADJUSTABLY SPACED CONTROL ELEMENTS

Tom T. Tsuji, Monterey Park, Calif., assignor to California Auto Radio, Inc.

Filed Nov. 12, 1970, Ser. No. 88,906
Int. Cl. A47b *67/02*; A47t *5/08*; G12b *9/00*
U.S. Cl. 312—245 **8 Claims**

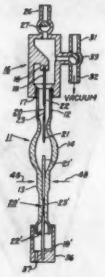


Automobile radio apparatus for universal in-dash mounting is disclosed in which bilateral control elements, such as volume controls in the case of a stereo receiver, are adjustably spaced so that prior to installation of said apparatus, the distance between said control elements may be adjusted to correspond to the distance between the existing control element holes in the dash.

3,685,880
MANUFACTURE OF LAMPS OF THE COMPACT ARC DISCHARGE TYPE

John C. Sobieski, Russell Township, Ohio, assignor to General Electric Company

Filed July 6, 1970, Ser. No. 52,392
Int. Cl. H01j 9/18
U.S. Cl. 316—19 3 Claims

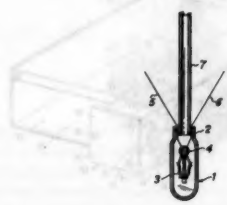


A method of assembling and processing a lamp, particularly the compact arc discharge type of lamp which operates at high temperature and employs regenerative cycling to prevent evaporation of electrode material onto the bulb wall. A quartz envelope is provided, having first and second elongated tubular stems extending from a bulb portion. A pair of elongated electrode assemblies are positioned in the stems, with the ends thereof extending into the bulb portion. An inert gas is flowed into the first stem and hence through the envelope, while the second stem is being heated. The second stem is pinch-sealed to its electrode near the outer end thereof, and then a vacuum is applied at the first stem so as to draw the heated inner portion of the second stem tightly against its electrode. Metal iodide or other desired material is dispensed into the envelope through the first stem, and argon or other desired fill gas is let into the envelope through the first stem, at a pressure less than atmospheric. The second stem then is heated and pinch-sealed to its electrode near the outer end thereof, whereupon the less than atmospheric pressure in the envelope draws the heated inner portion of the first stem tightly against its electrode.

3,685,881
METHODS OF MAKING INCANDESCENT LAMPS

Jean Rochet, 19, rue Sadi Carnot, 92 Asnieres, France

Filed July 7, 1970, Ser. No. 52,923
Claims priority, application France, Aug. 6, 1969, 6927006
Int. Cl. H01j 9/18
U.S. Cl. 316—19 1 Claim

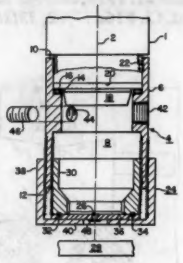


A method of making an incandescent lamp comprises passing a filament for the lamp and a filament support through an opening in a bulb so that conductors from the filament pass out through the opening. An exhaust tube is then placed partially inside the bulb through the opening with the conductors passing between the tube and the edge of the wall of the bulb surrounding the opening. The exhaust tube is then sealed to the bulb and the interior of the bulb subjected to a vacuum. The exhaust tube is then sealed and a cap is threaded over the exhaust tube on to the sealed joint between the exhaust tube and the bulb. The cap has two contact members for electrical connection to the conductors.

3,685,882
SELF-ALIGNED GAS ASSISTED LENS FOR LASER BEAM APPARATUS

Anton Van Der Jagt, Mount Airy, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 2, 1970, Ser. No. 86,212
Int. Cl. G02b
U.S. Cl. 350—63 11 Claims

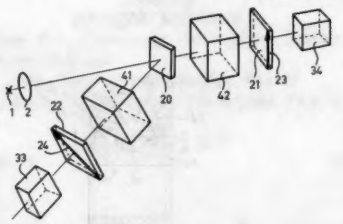


A self-aligned gas assisted lens for a laser beam apparatus wherein the orifice through the sheet aperture is formed by the laser beam and consequently is in exact alignment with the laser beam and of a minimum cross-sectional area.

3,685,883
APPARATUS FOR DETECTING THE ORIENTATION OF THE PLANE OF POLARIZATION OF A PLANE-POLARIZED BEAM OF RADIATION

Johannes Antonius Maria Mes, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 4, 1971, Ser. No. 112,721
Claims priority, application Netherlands, Feb. 7, 1970, 7001772
Int. Cl. G02f 1/26
U.S. Cl. 350—150 3 Claims



An apparatus is described for detecting the orientation of the plane of polarization of a plane-polarized beam of radiation by means of a radiation-sensitive detection system.

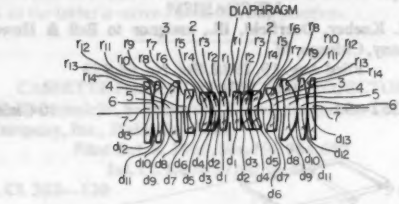
It is shown that the insertion of an isotropic beam-splitting element in the path of the beam and the insertion of a series arrangement of at least three birefringent elements at least one of which is an electro-optical crystal in each of the paths of the sub-beams and the application to the electro-optical crystals traversed by one of the sub-beams of periodic voltages which differ in phase by one-fourth cycle with the periodic voltages applied to the electro-optical crystals traversed by the other sub-beam enable the orientation of a rotating plane of polarization to be accurately determined.

3,685,884

1 X OBJECTIVE FOR PROJECTION PRINTING

Kenichi Harada, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1971, Ser. No. 110,810
Int. Cl. G02b 9/64
U.S. Cl. 350—214 5 Claims



1 x objective for projection printing having a high resolving power. The objective consists of a forward and a rearward lens system identical to each other but arranged in symmetry with respect to a diaphragm located therebetween. Each of the lens systems comprises first to seventh lens components beginning at the side of the diaphragm and each of the lens components consists of a single lens element. In order to improve the aberrations of the objective, the first lens component is a positive lens element and the second lens component is a positive meniscus with its convex surfaces directed to the diaphragm, the third lens component being a negative meniscus with its convex surface directed to the diaphragm, the fourth lens component being a negative meniscus with its concave surfaces directed to the diaphragm while the fifth lens component is a positive lens element with one of its surfaces having a greater curvature than that of the other surface being concave toward the diaphragm and each of the sixth and seventh lens components is a positive lens element. Each of the lens systems satisfies the following conditions:

$$0.2f<d_7+d_8+d_9<0.45f \quad (1)$$

$$0.12f<Ad_8<0.4f \quad (2)$$

$$-0.45fr_7<-0.25f \quad (3)$$

$$0.33f<Ar_8<0.53f \quad (4)$$

where:

f = the focal length of each of the lens systems

d_i ($i=1, 2, ----$) = the thickness of the lens element or the air gap beginning at the side of the diaphragm.

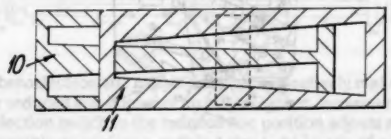
r_i ($i=1, 2, ----$) = the radius of curvature of the surfaces of the respective lens element beginning at the side of the diaphragm.

3,685,885

RADIATION ATTENUATING COMB ASSEMBLY

William Anthony Scott, Glenrothes, Fife, England, assignor to Beckman Instruments, Ltd., Glenrothes, Fife, Scotland

Filed Oct. 2, 1970, Ser. No. 77,666
Claims priority, application Great Britain, Oct. 17, 1969, 50,995/69
Int. Cl. G01j 3/02
U.S. Cl. 350—271 2 Claims



There is disclosed a beam-attenuation comb assembly for double-beam, optical null spectrophotometers comprising a major and minor comb adapted for mutual registration. The major comb has a single wedge shaped aperture and the minor comb a pair of similarly shaped apertures. In operation the assembly is driven in the manner well known in the art. Upon actuation of a solenoid, the major and minor comb assembly is disengaged and only the minor comb is driven to achieve beam balancing. Since the change in attenuation per unit displacement of the minor comb is different than that for the major and minor comb assembly, a scale expansion is achieved.

3,685,886

FILTER FOR IMAGE PICKUP IN SURFACE-SEQUENTIAL COLOR TELEVISION

Toshihiko Nakajima, Tokyo, and Yasufumi Yumde, Iruma-gun, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,371
Claims priority, application Japan, Oct. 7, 1969, 44/79604
Int. Cl. G02b 5/22
U.S. Cl. 350—315 3 Claims

A filter for image pickup in surface-sequential color television, comprising a rotary disc consisting of a tricolor filter for red, green and blue, boundary lines for division of said three-color filter being in such a spiral form that the tangential line of said each boundary line and the scanning line of an image pickup tube are coincident.

ERRATUM

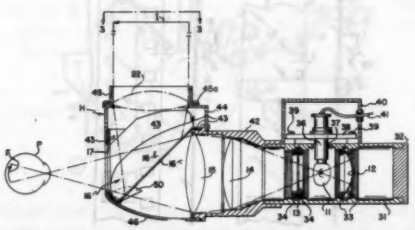
For Class 351—47 see:
Patent No. 3,685,889

3,685,887

INDIRECT OPHTHALMOSCOPE

Robert V. Spurney, 2659 Eaton Road, University Heights, Ohio

Continuation-in-part of Ser. No. 769,695, Oct. 22, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,225
Int. Cl. A61b 3/12
U.S. Cl. 351—6 13 Claims



A compact indirect ophthalmoscope, adapted to hand-held or mounting support, with a prefocused direct line illumination system, has an observing system including a right dihedral angle, semi-silvered beam-splitting and image erecting mirror interposed symmetrically in and with dihedral edge at 45° angle to the beam axis to intercept and rotate at right angles the cone of rays diverging from the eye, providing by the ob-

servation system objective lens arrangement a large erect real aerial image of an extensive fundus area, suitable for binocular and stereoptic observation by an appropriate known form of loupe, if desired, and also affording substantially simultaneous observability of the fundus image, pupil and eye exterior; means being provided to suppress or eliminate from the aerial image corneal and other reflections. A second form utilizes a planar beam-splitting mirror to turn the convergent illuminating rays through a right angle and thence into the eye, emergent rays from the eye passing back through the mirror, the objective lens and then encountering a dihedral mirror erecting and directing the image toward a desired angle of observation.

3,685,888

Patent Not Issued For This Number

3,685,889

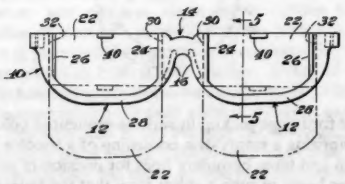
SUNGLASSES HAVING ADJUSTABLE LENSES

Robert H. Thatcher, Hatchville, Mass.

Filed March 23, 1971, Ser. No. 127,138

Int. Cl. G02c 9/00, 7/10

U.S. Cl. 351—47 **3 Claims**



The lenses of the sunglasses are adjustable in the frame for the purpose of moving the same from a normal position in front of the eyes downwardly to a position over the cheeks in an area immediately below the eyes whereby to prevent glare from the cheeks into the eyes.

3,685,890

VARIABLE-FORMAT CINEMATOGRAPHIC APPARATUS

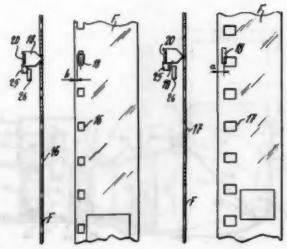
Jaroslav Sekera, Yverdon, Switzerland, assignor to Paillard S.A., Sainte-Croix, Vaud, Switzerland

Filed Sept. 14, 1970, Ser. No. 71,927

Claims priority, application Switzerland, Oct. 3, 1969, 14896/69

Int. Cl. G03b 21/50

U.S. Cl. 352—79 **4 Claims**



Cinematographic apparatus, e.g., film projector, can accommodate film of different formats, especially normal 8 mm and Super-8 film. A sensing device distinguishes between the film types by the differences in the configuration of the respective marginal perforations in the films. Specifically, the sensing device is in the form of a finger, forming one part of an electric contact and capable of penetrating through only one of the film types to engage the other part of the contact on the other side of the film. The finger controls the displacement of other elements necessary for the adaptation of the apparatus to different film formats.

3,685,891

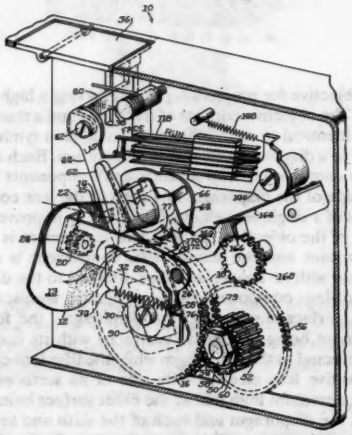
MOTION PICTURE CAMERA LAP DISSOLVE MECHANISM

Henry J. Koeber, Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Aug. 19, 1970, Ser. No. 64,953

Int. Cl. G03b 21/36

U.S. Cl. 352—91 **10 Claims**



A motion picture camera for effecting fades and dissolves. Control apparatus operates the camera mechanism during such exposures and substantially reduces the degree of manipulation required by the operator.

3,685,892

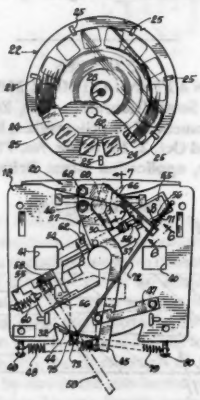
TONE ARM AUTOMATIC RESET MECHANISM FOR AN AUDIO-VISUAL DEVICE

Alan G. Lewis, 2700 Rainier Place, West Linn, Oreg.

Filed Sept. 18, 1970, Ser. No. 73,562

Int. Cl. G03b 31/06

U.S. Cl. 353—19 **8 Claims**



The audio-visual device includes a slot for receiving an audio-visual unit consisting of a transparency disk and a

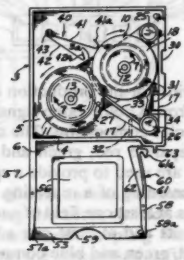
record rotatably mounted from the disk. A mechanism serves TO index the tone arm for playing successive spaced messages on the record in response to movement of a manually operated arm which advances the transparency disk for viewing of successive transparencies. A reset mechanism is associated with the indexing mechanism for returning the tone arm to a starting position. A tripping mechanism cooperates with the reset mechanism to release the tone arm; this tripping mechanism is actuated by a projection on the transparency disk as the latter is moved to its starting position.

3,685,893

CASSETTE FOR A SOUND SLIDE PROJECTOR

William Castedello, Southington, Conn., assignor to The Kalart Company, Inc., Plainville, Conn.

Filed Oct. 8, 1969, Ser. No. 864,697
Int. Cl. G03b *21/00, 31/06*
U.S. Cl. 353—120 **9 Claims**



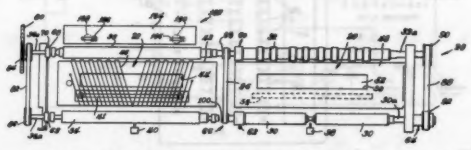
A cassette for a sound slide projector has in a casing a first compartment and a second compartment. The first compartment accommodates a tape holding mechanism and is accessible through recesses for forward winding and rewinding of the tape and for recording a message on the tape or playing back such message from the tape. The second compartment accommodates the slide and has in its bottom wall a slot for removing the slide from the cassette into a projection position and for returning the slide into the compartment upon completion of the projection and play-back of the tape in the first compartment.

3,685,894

PHOTOELECTROSTATIC COPYING MACHINE HAVING LAMPS FOR EXPOSING COPY MARGINS

George K. Lux, San Jose, Calif.; James B. Ellis, Chicago, and John J. Schulze, Prospect Heights, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 699,507, Jan. 22, 1968, Pat. No. 3,556,655. This application Feb. 10, 1970, Ser. No. 14,885
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **3 Claims**



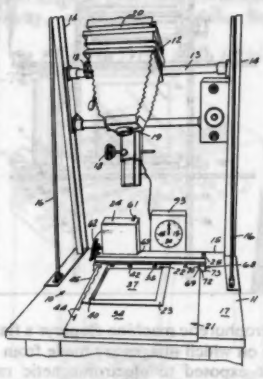
A photoelectrostatic copying machine selectively makes full size or reduced size copies of an original sheet. movement of a size selection switch to the reduced size position adjusts an optics assembly to project a reduced size light image of an illuminated original sheet onto a copy sheet at an exposure station, and alters the speed of movement of the copy sheet relative to the original sheet. In order to prevent non-exposure of marginal areas of the copy sheet, edge exposure lamps, masked to expose only edge portions of the sheet, are energized automatically when the machine is conditioned for reduced size copymaking operation.

3,685,895

ELECTROPHOTOGRAPHIC CHARGING EASEL

Joseph E. Wright, Jr., Wheaton, and Donald R. Cohee, Skokie, both of Ill., assignors to Opto/Graphics Inc., Northbrook, Ill.

Continuation-in-part of Ser. No. 877,405, Nov. 17, 1969, abandoned. This application May 18, 1970, Ser. No. 38,433
Int. Cl. G03g *15/02*; G03b *27/58*
U.S. Cl. 355—3 **20 Claims**



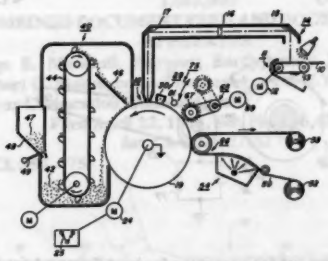
A device for retaining a piece of electrostatic sheet material in multiple and replaceable registry with a projected image and including manually movable apparatus, movable over the registered sheet material, for placing a uniform electrical charge on the photoconductive coating of the sheet material.

3,685,896

DUPLICATING METHOD AND APPARATUS

Norbett H. Kaupp, Newark, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 595,752, Nov. 21, 1966, Pat. No. 3,592,642. This application Aug. 28, 1970, Ser. No. 75,897
Int. Cl. G03q *13/16*
U.S. Cl. 355—3 **5 Claims**



Apparatus for producing multiple copies of electrostatically formed image by first developing the image and then transferring the developed image to copy paper by the application of heat and pressure to permanently affix the developed image to the copy paper leaving a reusable latent electrostatic image. In one embodiment the copy paper is moved past a heat source and then immediately urged into pressure contact with the developed image. In a second embodiment the copy paper is

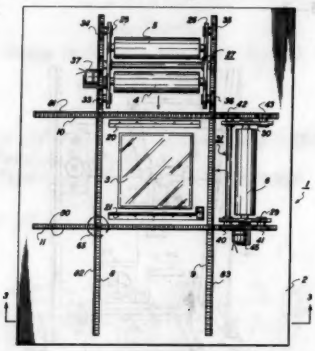
heated simultaneously while in pressure contact with the image by a centrally heated roller.

3,685,897

PHOTOELECTROPHORETIC APPARATUS USING PYRAMID GEARS

Robert L. Culligan, Canadice, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 28, 1970, Ser. No. 84,832
Int. Cl. G03b 5/00
U.S. Cl. 355—3 **8 Claims**



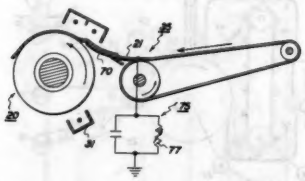
A photoelectrophoretic machine employs a flat transparent plate electrode on which images are made from a photoelectrophoretic ink exposed to electromagnetic radiation projected to the ink through the transparent plate and subjected to electric fields established between the plate and roller electrodes supported for travel over the plate. The rollers are journeled in first and second carriages that travel over the plate along different paths. The carriages are supported on pinion gears mated with rack gears on the four sides of the plate and intersecting one another. Pyramid gears are used at the intersections to enable the pinion gears on one rack to cross over an intersecting rack.

3,685,898

PAPER FLIP CONTROL APPARATUS

Ricardo A. Gonzalez, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 8, 1971, Ser. No. 206,228
Int. Cl. G03g 15/00; B65h 17/28
U.S. Cl. 355—3 **4 Claims**



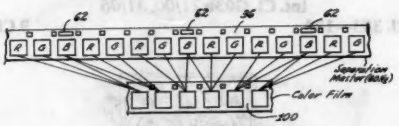
An improvement for apparatus for heat fixing a heat fusible image to a cut sheet of support material on which a xerographic powder image has been electrostatically transferred and wherein a charging device tacks the support material into thermal communication with a moving preheat roll for a predetermined period, and wherein another charging device of opposite polarity produces a pretacking condition of the moving preheat roll, a control circuit coupled to a guide baffle feeding the support sheet towards the preheat roll which control circuit includes a variable resistance for controlling a flow of charges to ground from the guide in order to minimize trail edge flip of the support material. The underside of the guide is coated with an electrically insulated material while the top side is electrically coupled to control circuit. The flow of electrical charges from the guide varies with the particular type of stock for the support material.

3,685,899

SEPARATION COLOR RECORDER SYSTEM

John W. Reeds, Jr., Thousand Oaks, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Mich.

Filed Feb. 11, 1970, Ser. No. 10,390
Int. Cl. G03b 27/32
U.S. Cl. 355—32 **13 Claims**



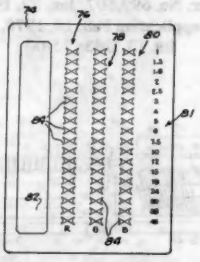
A system to provide for the production of standard motion picture color film from a color video signal or color information composed of color components. The color video signal is decoded into its separate red, green and blue components, which components are used to provide a special form of field sequential color consisting of a repeating color group where such group contains at least one field of each of the red, green and blue components and at least one additional field of at least one of the red, green and blue components. The special form of field sequential color is recorded on standard black and white film as a black and white separation master at either 60 field per second or 50 fields per second, depending upon the field rate of the video signal, which recording is accomplished using a continuous film motion electronic beam recorder. A standard color film is made from the separation master by exposing each frame of the color film in sequence to red, green and blue separation images using appropriate color filters with the separation master.

3,685,900

EXPOSURE CALCULATOR AND FILTER DEVICE FOR DARKROOM COLOR PHOTOGRAPHY

Herbert D. Kirby, Ann Arbor; George L. Nearhoof, Dexter, and Jimmie Glenn Culler, Ann Arbor, all of Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.

Filed Feb. 12, 1970, Ser. No. 10,789
Int. Cl. G03b 27/76
U.S. Cl. 355—32 **26 Claims**



Calculator for determining proper exposure times in making color prints from color negative films comprises an opaque mask with three series of windows having respectively blue, green and red filters of graduated density. The windows have double wedge shape to provide contiguous points and other points remote therefrom. Color print paper is test exposed to

light passing through the negative, a diffusion filter, and the graduated filters; when the paper is developed, the correct exposure time is indicated on the paper by the faintest double wedge image which has sharply defined points.

A filter device for use in conjunction with the calculator comprises a wheel rotatably mounted on the lens barrel of a projector and having a series of openings: one clear for focusing, one with a diffusion filter for the test exposure, and the others with blue, green, and red filters respectively.

3,685,901

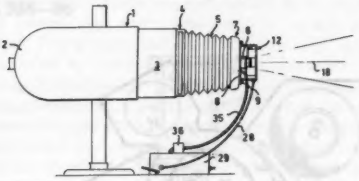
COLOR ENLARGER SYSTEM

Darrel R. Crete, 2329 C St., Sacremento, Calif.

Filed March 9, 1970, Ser. No. 17,825

Int. Cl. G03b 27/78

U.S. Cl. 355—38 **4 Claims**



An arrangement of conventional elements in an enlarging system for eliminating the beam splitter and eliminating the mounting of photocells and sampling filters within the enlarger or in a unit with the compensating filters, and the provision for mounting a compact set of electrically-actuable compensating filters only on the lens mount of the enlarger for movement therewith, and respectively operatively connecting the lens mount and compensating filters with the sampling filters and control circuitry with a flexible light carrier and an electrical conductor wire whereby the enlarger will be entirely separate from the control circuitry and sampling filters except for the wire and carrier.

3,685,902

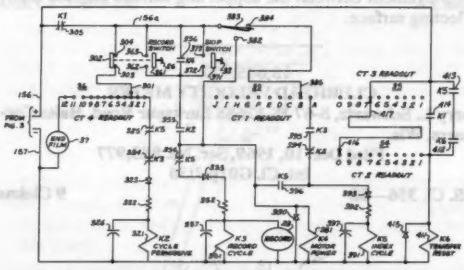
FICHE CAMERA DEVICE

John E. Blackert, Webster, N.Y., assignor to U.S. Dynamics Inc., Elmsford, N.Y.

Filed April 26, 1971, Ser. No. 137,215

Int. Cl. G03b 27/32

U.S. Cl. 355—64 **20 Claims**



A fiche camera is described for exposing frames on a film strip which subsequently is converted to a matrix array of photographic frames on a fiche, and the camera includes a fiche coordinate counting and display device, a shutter for exposing the photographic frames of the film strip, a film transport for advancing the strip film, and camera controls which include a record mechanism that automatically initiate operation of the shutter, the film transport, and the fiche coordinate counting and display device each time the record mechanism is operated. The fiche coordinate counting means visually displays the fiche coordinates of fiche number, column number, and frame number to the operator as documents are recorded.

3,685,903

Patent Not Issued For This Number

3,685,904

COPYING APPARATUS

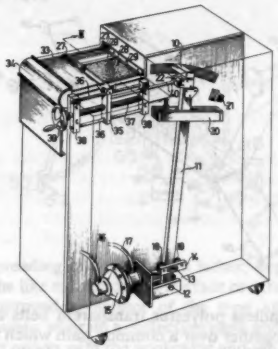
Olof Kring, Liljeornsgatan 37, Vallingby, and Stig G. J. Yngve, Tistelvagen 28, Enskede, both of Sweden, assignors to A B Gitson-System, Stockholm, Sweden

Filed Aug. 26, 1969, Ser. No. 853,031

Claims priority, application Sweden, Sept. 3, 1968, 11857/68

Int. Cl. G03b 27/58; B65b 17/36

U.S. Cl. 355—74 **7 Claims**



A copying apparatus for continuously reproducing images on a web of copying paper is described. The apparatus is characterized by a web feed means which includes a carrier member adapted to engage the web in the feed direction. The carrier is capable of being moved backwards and forwards at an amplitude which may be changed by the setting of a means for determining the size of the image field on the web so that the feeding distance, during each cycle of movement of the carrier, is equal to the length of the image last exposed in the longitudinal direction of the web and, if desired, also a length of unexposed web for outwardly projecting edge portions.

3,685,905

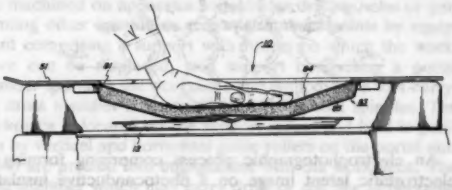
COMBINED DOCUMENT FEED AND BOOK COPYING APPARATUS

George E. Marshall, Fairport; Bartholomew J. Perno, and Robert G. Stokes, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed April 22, 1971, Ser. No. 136,437

Int. Cl. G03b 27/62

U.S. Cl. 355—75 **5 Claims**



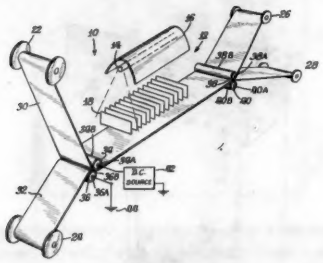
Apparatus for copying documents and/or books. A book-like housing is pivotally mounted in overlying relationship to a

copying machine. The top wall of the housing is pivotally mounted also to obtain free acess to the platen and has a diaphragm assembly mounted therein for restraining books placed in the housing against the platen of the copying machine. A document transport co-extensive with the platen is pivotally mounted on the housing for movement from a first position wherein the document transport feeds documents into overlying relationship with said platen to a second position away from said platen where books may be positioned in overlying relationship thereto.

3,685,906
APPARATUS AND MEANS FOR MAKING DUPLICATES OF A MICROFILM ORIGINAL

Donald E. Raterman, Mount Prospect, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed May 22, 1970, Ser. No. 39,804
Int. Cl. G03b 27/10
U.S. Cl. 355—103 **7 Claims**

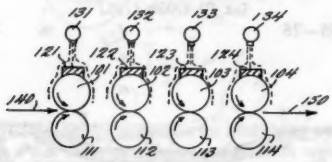


A pair of endless polyester transparent belts are provided which come together over a common path which forms an exposure station. Film strips which are to be duplicated on other light sensitive film strips are fed in registration between the contacting belts. Each of the belts and/or the film strips are imparted oppositely poled electrostatic charges by a corona discharge or contact electrode to cause the strips to be electrostatically attracted to one another so that they will be locked together during movement at a rate of 8 to 50 feet per minute through the exposure station.

3,685,907
ELECTROPHOTOGRAPHIC PROCESS

Masamichi Sato; Osamu Fukushima; Hajime Miyazuka; Masaaki Takimoto; Seiji Matsumoto; Yasuo Tamai, and Satoru Honjo, all of 105, Ohaza, Mizonuma, Asaka-shi, Saitama, Japan

Filed June 25, 1970, Ser. No. 49,793
Claims priority, application Japan, June 25, 1969, 44/50116
Int. Cl. G02g 13/00
U.S. Cl. 355—17 **10 Claims**

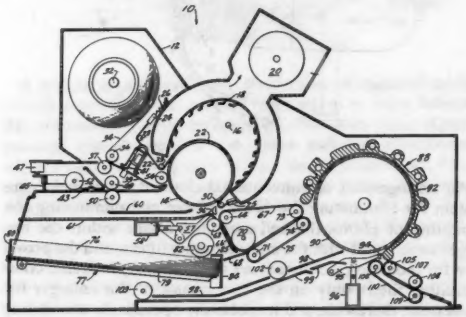


An electrophotographic process comprising forming an electrostatic latent image on a photoconductive insulating coating and developing said latent image by liquid development where the photoconductive coating and a development electrode are brought into direct contact with each other during development. The coating and/or the development electrode have uniform surface irregularities of very fine structure such that the directly contacted area of the coating with the electrode does not exceed 10 percent of the whole area of the processed surface to be developed where the majority of the contact points having a representative size not greater than 50 microns. The two surfaces undergo no movement during the contact.

3,685,908
COPYING MACHINE

Edward A. O'Mara, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed June 18, 1970, Ser. No. 47,462
Int. Cl. G03b 27/30
U.S. Cl. 355—107 **9 Claims**

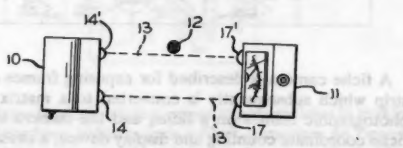


A copying machine in which a light-sensitive intermediate sheet and an original document are fed into intimate copying contact with the leading edge of the intermediate sheet extending beyond the leading edge of the original document. A semi-reflecting surface is positioned between a light source and a supporting surface and cooperates with the light source and the supporting surface for reflex exposure of the intermediate sheet and the original document. The semi-reflecting surface is formed to cooperate with the supporting surface to transport the original document and the intermediate sheet in intimate contact therewith between said surfaces upon relative movement between the supporting surface and the semi-reflecting surface.

3,685,909
CLUBHEAD VELOCITY METER

Larry L. Schwartz, S-67 W-12685 Larkspur Road, Hales Corners, Wis.

Filed Dec. 10, 1969, Ser. No. 883,977
Int. Cl. G01p 3/36
U.S. Cl. 356—28 **9 Claims**



Velocity meter electronically reads out the velocity of a golf club at the point in the swing of its juncture with the golf ball

by measuring the voltage build up occuring responsive to the interference of the club with a pair of light beams impinging on a pair of photosensitive detectors.

3,685,910

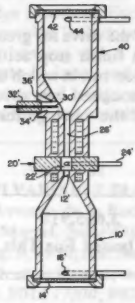
Patent Not Issued For This Number

3,685,911

CAPILLARY ARC PLASMA SOURCE FOR AND METHOD OF SPECTROCHEMICAL ANALYSIS

Ralph L. Dahlquist, and James L. Jones, both of Santa Barbara, Calif., assignors to Applied Research Labortories, Inc., Sunland, Calif.

Filed June 17, 1968, Ser. No. 737,633
Int. Cl. G01j *3/30*
U.S. Cl. 356—86 **1 Claim**



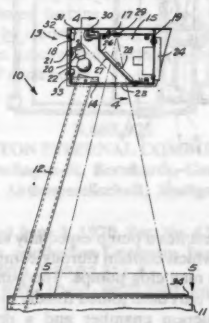
A wall-stabilized electric arc within a capillary tube, supported by a gas flowing lengthwise through the tube is used to excite a material for spectroscopic analysis. A material to be analyzed, in gaseous or finely comminuted form, is fed into the arc near one end and carried through it by the working gas. Emission or absorption of radiation is observed endwise of the tube.

3,685,912

LARGE AREA RETRO-TRANSMITTING LIGHT METER

Dwin R. Graig, Gaithersburg, Md., assignor to Ingenuics, Inc., Gaithersburg, Md.

Filed April 1, 1970, Ser. No. 24,638
Int. Cl. G01b *11/28*; G01n *21/22*
U.S. Cl. 356—157 **4 Claims**



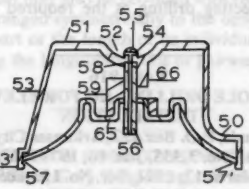
A light meter for measuring the light reflected from a large area. A point source of light is reflected onto a high gain beaded reflective sheeting screen having the property of reflecting most of the light directly back to the source of the light. A reflecting mirror for the light is of the type that passes substantially half of the light and reflects substantially half of the light and is arranged at an angle so that part of the returning light from the reflecting screen will pass through the mirror to a photo electric cell positioned to correspond to the position of the light. The partially opaque object is laid on the reflective screen and the remaining portion of the reflecting screen is covered with a mask. The light is adjustable in intensity and is adjusted so that the photocell meter reads one hundred after the mask is in position but before the object is placed thereon. The reading after the object is placed thereon will give a percentage of clear area with respect to opaque area.

3,685,913

CREAM AND LATHER APPLICATOR

Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn.

Filed Sept. 22, 1970, Ser. No. 74,387
Int. Cl. A46b *5/02*; B65d *83/06*
U.S. Cl. 401—190 **4 Claims**



For the spreading of shave cream lather, depilatories, unguents and the like substances on the face or other parts of the body, an improved applicator of the type attached to an aerosol container: wherein a deflection plate and/or an expansion chamber coacts with the applicator and the aerosol valve orifice, to direct the flow of lather and the like onto the spreading surface, and to prevent the lather from squirting into the eyes or other undesired areas of the user; wherein the operation of the valve is controlled by lever mechanisms, pressing plates, and locking stops.

3,685,914

Patent Not Issued For This Number

3,685,915

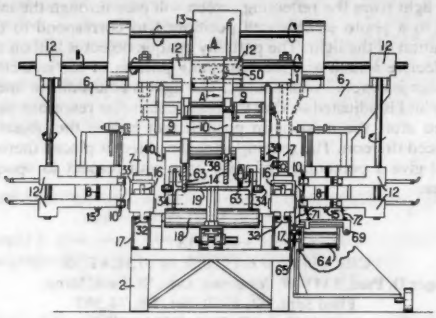
APPARATUS FOR MACHINING ELONGATED WORKPIECES

Jean Vierstraete, 83, rue Victor-Hugo, 62 Oignies, France

Filed May 7, 1969, Ser. No. 822,525
Claims priority, application France, May 9, 1968, 19099; June 26, 1968, 19147
Int. Cl. B23b *39/22*, *39/18*
U.S. Cl. 408—26 **22 Claims**

Elongated workpieces such as structural profile members are machined on apparatus suitable for drilling holes or performing other operations at predetermined points by equipment comprising a support with rollers on which the workpiece can be displaced, said support comprising a portal member spanning the workpiece and embodying a tool-carrying cross member having suitable driving tool spindles. The workpiece is located on the support rollers and held in position by vertical and horizontal guide rollers on the portal unit which are pressed into engagement with the workpiece. The cross member which may carry drills or the like is operable towards the workpiece with a cutting feed by means of hydraulic piston devices, and locating means are provided for correctly positioning the workpiece on the rollers. Lengthwise positioning of the cross member is effected by means of an in-

dicator device with a floating zero system which is operated by the displacement of the portal member on the support and is

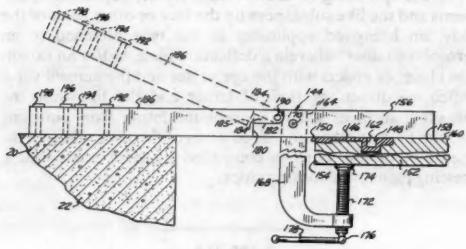


thus available for determining the position of the portal member for effecting drilling at the required points of the workpiece.

3,685,916
BOLT HOLE DRILLING JIG FOR ELEVATOR INSTALLATION

Charles M. Loomis, P.O. Box 453, Arkansas City, Kans.

Division of Ser. No. 3,335, Jan. 16, 1970. This application March 12, 1971, Ser. No. 123,605
Int. Cl. B23b 47/28
U.S. Cl. 408—72 **3 Claims**



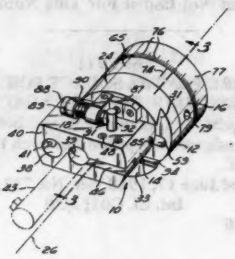
This precision drilling jig has a base with a flat bottom surface adapted to rest upon the flat top surface of an elevator car sill and a locating rib fitting into a groove in the sill. An angle arm is secured to the forward portion of the base and extends downward therefrom beneath the car platform carrying the sill and has a clamping screw movable upward into clamping engagement with the car platform. Pivotally mounted on the forward portion of the base to swing upward from a horizontal position coextensive therewith is a drilling arm containing a plurality of precisely located holes in which are mounted drilling bushings for precisely guiding the drill which drills the bolt holes in the elevator shaft entrance sill footing of the building floor for the subsequent bolting thereto of two laterally-spaced unfolded Z-brackets to which in turn is bolted the stationary elevator shaft entrance door sill.

3,685,917
BORING AND FACING HEAD

Sylvester Patt, 34213 Lake Shore Blvd., Willoughby, Ohio

Filed Nov. 12, 1970, Ser. No. 88,661
Int. Cl. B23b 29/034
U.S. Cl. 408—150 **14 Claims**

An eccentrically adjustable boring and facing head having a tool or workholder carriage reciprocably mounted in a guideway on a body and positionable along the guideway by rotation of a calibrated adjustment dial on the body through a cam and follower carriage drive. The carriage drive includes a pair of opposed cam followers adjustable with respect to one another to eliminate backlash and to take up eventual mechanical wear in the drive. A micrometer screw stop, provided on the body, is adjustable in the direction of carriage travel and operates directly on the carriage to precisely posi-



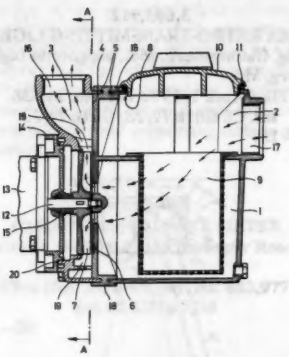
tion it independently of the drive for greater positional accuracy and for retaining a finish stop setting, determined only once, during a production run in which the separably operable adjustment dial and associated cam drive are manipulated to change the position of the carriage for rough finishing subsequent workpieces.

3,685,918
Patent Not Issued For This Number

3,685,919
CIRCULATING PUMP

Willi Speck, Berlingerdorf, and Walter Speck, Heuberg, both of Germany, assignors to Speck-pumpen Daniel Speck & Soehue, Hilpoltstein, Germany

Filed Sept. 11, 1970, Ser. No. 71,567
Int. Cl. F04d 9/00, 29/02, 29/00
U.S. Cl. 415—53 **8 Claims**



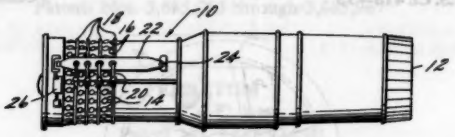
This disclosure teaches a pump especially suitable for use in conveying liquids which contain fibrous components or other components which may clog pumps. The pump has a suction part and a pressure part both joined fixedly to an intermediate part to form a suction chamber and a pressure chamber respectively. The suction chamber is provided with a filter removable via a filter opening with a transparent cover plate. An impeller and a hard disk are mounted in the pressure part and are removable via an impeller opening provided in the suction part.

3,685,920

ACTUATION RING FOR VARIABLE GEOMETRY COMPRESSORS OR GAS TURBINE ENGINES

Joseph C. Burge, Cincinnati, Ohio, assignor to General Electric Company

Filed Feb. 1, 1971, Ser. No. 111,411
Int. Cl. F04d 27/00, 15/00
U.S. Cl. 415—147 4 Claims



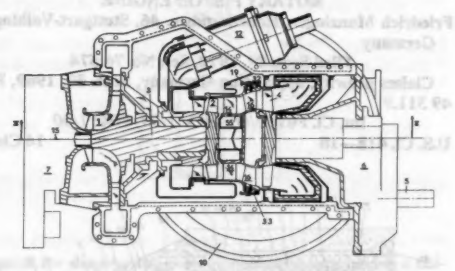
An improved actuation ring for controlling the angular position of compressor vanes connected by levers thereto is described. Two arcuate sectors of less than 180° angular extent are joined by bridge members. Each connection between a sector and a bridge member includes a dowel bushing, a bolt extending through the bushing with a loose fit therebetween with a nut threaded onto its inner end and a second bolt extending through the sector and bridge member with a loose fit therebetween and a nut threaded onto its inner end.

3,685,921

GAS TURBINE WITH VARIABLE BLADE DISTRIBUTOR

Lucien Dekeyser, 23 Avwnue de la Rochelle, Chelles, France, assignor to Bennes Marrcl, Saint-Etienne Loure, France

Filed Aug. 5, 1970, Ser. No. 61,205
Claims priority, application France, Aug. 14, 1969, 6928154
Int. Cl. F01d 17/00; F02c 1/06
U.S. Cl. 415—159 1 Claim



An annular guide ring between a high pressure turbine rotor and a low pressure turbine rotor is provided with pivotal blades operable by a common ring gear and biased radially inwardly against an inner annular casing by a spring surrounding the pivot shaft of each blade.

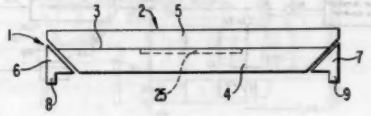
3,685,922

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 3, 1970, Ser. No. 43,128
Claims priority, application Germany, June 7, 1969, P 19 29 012.1; Jan. 20, 1970, P 20 02 311.4
Int. Cl. F01c 19/02; F03c 3/00; F04c 27/00
U.S. Cl. 418—113 21 Claims

A rotary piston internal combustion engine, particularly of trochoidal construction, which has a piston that is provided at its corners with sealing bars which include support and wear parts with the latter forming the head portions; the wear part of the sealing bar is either superfinish-machined at its bottom side and, wetted with a lubricant, placed on the support part, also superfinish-machined at its corresponding surface, so that the wear part can be displaced parallel to its bottom side whereas it cannot be lifted perpendicularly to the bottom side by reason of the effect of the air pressure, or in which, in the alternative, the wear part of the sealing bar is subdivided perpendicularly to its longitudinal axis and each subdivided wear part is connected with the support part of the sealing bar at its bottom side within only a small area of its length by soldering,



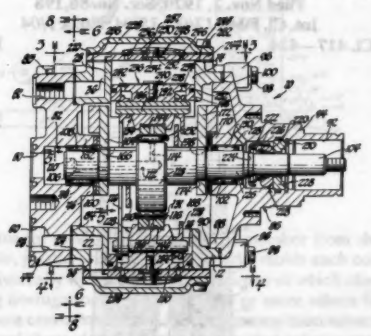
cementing or the like; the bottom side of the wear part or of the individual subparts of the wear part and/or the top side of the support part may also be provided with recesses which are preferably arranged symmetrically to the center of the length of the wear part or the length of its individual subparts, particularly along the longitudinal axis or pairwise symmetrically thereto.

3,685,923

AUTOMOTIVE AIR CONDITIONING COMPRESSOR

Everett C. Hutchins; Gary E. Spencer, and Marion K. Tucker, all of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1970, Ser. No. 87,410
Int. Cl. F04b 1/04, 27/04, 21/04
U.S. Cl. 417—273 4 Claims



In preferred form, a four cylinder radial compressor which is operated by an eccentric slider drive mechanism. Two pairs of cylinder bores are radially spaced 90° apart with the center lines of the cylinders lying in a common plane. Opposed pairs of pistons in the bores are linked together with sheet metal links that apply piston preload to an eccentric slider block for high speed continuous operation. The compressor is lubricated by oil that is carried by the refrigerant to the compressor. The refrigerant gas enters the compressor at the rear of the drive shaft and the suction return is diverted into the cylinder housing while the heavier oil enters an aligned hole in the shaft for distribution to the eccentric bearing and eccentric slider of the drive mechanism.

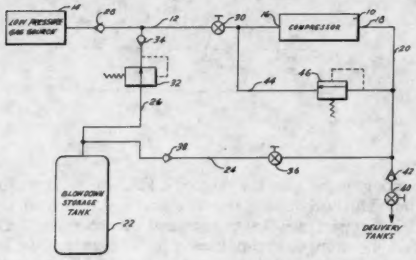
3,685,924

Patent Not Issued For This Number

3,685,925
BLOWDOWN STORAGE FOR COMPRESSORS

Robert McJones, 529 Via Del Monte, Palos Verdes Estates, Calif.

Filed Oct. 28, 1970, Ser. No. 84,600
Int. Cl. F04b 49/00
U.S. Cl. 417—302 4 Claims

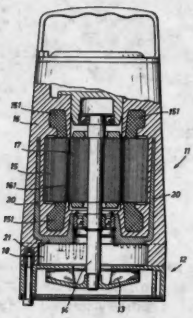


When a compressor is shut down, the gas in its pumping cylinders is discharged into a blowdown storage tank. When the compressor is started again, gas from the blowdown storage tank is used as a gas source for the compressor until pressure in the storage tank approaches normal supply pressure.

3,685,926
SUBMERSIBLE PUMP ASSEMBLY

Albert Blum, Scheiderhohe, Siegkreis, Germany

Filed Nov. 2, 1970, Ser. No. 86,198
Int. Cl. F04b 17/00, 35/04; H02k 1/04
U.S. Cl. 417—424 14 Claims



A submersible electric motor pump assembly for pumping a liquid and having a motor and housing comprising at least the motor stator including the appertaining windings being embedded and totally enclosed in an electrically insulating mass. The mass is provided with heat conducting means insulated electrically from the motor stator for conducting heat from the motor stator and the mass to positions whereby the heat is dissipated by the liquid to be pumped.

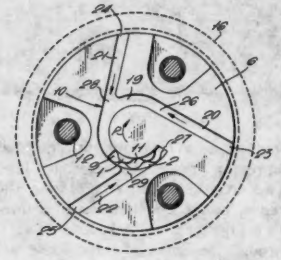
ERRATUM

For Class 417—223 see:
Patent No. 3,686,687

3,685,927
LIQUID PUMP, PARTICULARLY A FUEL-OIL PUMP

Jorgen Hartvig Petersen, Nordborg, and Ingvard Mosby Madsen, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 16, 1970, Ser. No. 89,638
Claims priority, application Germany, Nov. 17, 1969, P 19 57 654.6
Int. Cl. F01c 21/00; F03c 3/00; F04c 15/00
U.S. Cl. 418—15 3 Claims

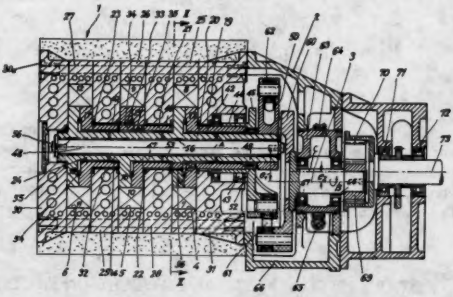


The invention relates to a pump of a type commonly used for oil burners having kidney shaped inlet and exhaust passages formed in a wall adjacent the pumping elements of the pump. Based on the discovery that air pockets are formed in the suction inlet when there is an appreciable decrease in the velocity of the liquid being sucked through the inlet passage or passages, inlet passage means are provided having nondecreasing cross sections so as to maintain nondecreasing velocities of liquids flowing therein.

3,685,928
ROTARY PISTON ENGINE

Friedrich Munzinger, Hohenrandstr. 46, Stuttgart-Vaihingen, Germany

Filed Sept. 29, 1970, Ser. No. 76,574
Claims priority, application Germany, Sept. 30, 1969, P 19 49 311.9
Int. Cl. F01c 1/00; F03c 1/00; F04c 1/00
U.S. Cl. 418—18 14 Claims



A rotary piston engine includes annular members forming cylinders and annular segment pistons moving on the insides of the cylinders with separating members between successive cylinders. The two pistons in each cylinder are mounted on hubs which can turn upon the other, and the hubs of the cylinders of the pistons of successive cylinders are joined by shaft portions one within the other which project through the separating members and interengage with the corresponding hubs of adjacent cylinders.

The hubs form inner and outer shafts which at one end of the engine carry cranks, the pins of which are connected by connecting rods to points on a disc which is mounted on a

shaft. This shaft is an annular member which itself can turn about an axis eccentric to the axis of the annular cylinders, the latter shaft being also eccentrically mounted in the annular member. The latter shaft is connected to an output shaft by a pinion engaging an internal gear on the output shaft.

ERRATA

For Classes 423—329 through 423—580 see:
Patents Nos. 3,685,963 through 3,685,967

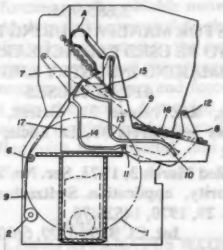
ERRATUM

For Class 423—302 see:
Patent No. 3,685,974

3,685,929
PRESS FOR SHAPING AND CURING PNEUMATIC TIRES

Shoushi Yoshida, L201 Yamanikage-Mansion 213-30 Daibutsugahira Nishibirana Mikage-cho, Higashinada-ku, Kobe; Atsuaki Iwama, 1014 Ushigoyayama Shinohara, Nada-ku, Kobe; Takashi Odaka, 3-7 Takamaru, Tarumi-ku, Kobe, and Tetuo Suda, 13-1 Sakuraguchi-cho, Nada-ku, Kobe, all of Japan

Filed Oct. 5, 1970, Ser. No. 78,022
Claims priority, application Japan, Oct. 6, 1969, 44/80072
Int. Cl. B29h *5/02*
U.S. Cl. 425—38 **4 Claims**



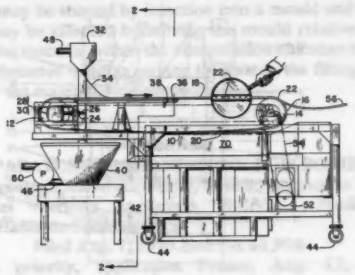
A press for shaping and curing pneumatic tires having a collapsible bladder controlled by a center mechanism, and having a movable upper mold section and a stationary lower mold section, and having a mechanism for withdrawing a cured tire from the press including an arm device adapted to engage a cured tire suspended from the center mechanism and a drive unit for driving the upper mold section for opening and closing movement of the press and for driving the arm device for removing a cured tire from the center mechanism and discharging the tire from the press.

3,685,930
APPARATUS FOR CONTINUOUSLY MOLDING SHEET MATERIAL

Leonard P. Davis, and Robert M. Elliott, both of Kingsport, Tenn., assignors to Kimberly-Clark Corporation

Filed May 27, 1970, Ser. No. 40,952
Int. Cl. B29c *17/04*
U.S. Cl. 425—71 **5 Claims**

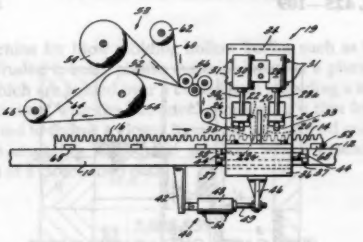
Apparatus is disclosed for producing molded sheet material. An endless belt-type mold is entrained over rolls, providing an upper run and a catenary. Molten thermoplastic material is extruded onto the upper run and caused to assume the configuration of the belt mold by the action of vacuum applied from beneath the belt before the molten material solidifies. The molded sheet material is stripped from the belt mold near the end of the upper run, and apparatus is provided fro efficiently cooling the catenary of the belt mold before molten material is applied again.



3,685,931
APPARATUS FOR PRODUCING A CORRUGATED MEMBER

Harry J. Craven; William F. Hannahan, and James J. Viscusi, all of Albuquerque, N. Mex., assignors to General Electric Company

Filed Nov. 29, 1971, Ser. No. 202,798
Int. Cl. B29c *17/04*
U.S. Cl. 425—89 **7 Claims**



Apparatus for producing a corrugated member from sheet, for example, plastic preimpregnated fabric, molds each corrugation individually with a plurality of bars one of which clamps an existing corrugation in place and one or more others form new adjacent corrugations. An indexing means then advances the mold and sheet along with the bars so that subsequent relief of the bars from the mold and their retraction to their original location, positions the bars for producing consecutive corrugations in the mold.

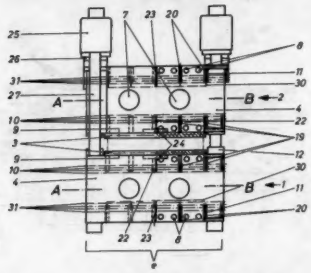
3,685,932
HEATING PLATEN PRESS

Heinrich Pfeiffer, Berliner Ring 1, 7517 Eppingen, Baden, Germany, assignor to J. Dieffenbacker GmbH Maschinenfabrik, Eppingen, Baden, Germany

Filed Aug. 27, 1970, Ser. No. 67,412
Claims priority, application Germany, Aug. 27, 1969, P 19 43 560.0
Int. Cl. B30b *7/02*; B29j *5/00*
U.S. Cl. 425—109 **15 Claims**

Heatable single or multilevel platen press for the manufacture of wood composition panels or the like, includes a stationary base structure and a hydraulically displaceable structure, each of the structures being composed of a plurality of individual bridge members and rib members interconnecting the bridge members and forming conjointly therewith a grid

extending over the entire width of the press; press platens loosely mounted on the grid at the workpiece-side thereof, the



rib members having fluid circulation passages for equalizing longitudinal thermal tensions, and the bridge members having fluid circulation passages for equalizing transverse thermal tensions.

3,685,933

APPARATUS FOR PRODUCING AN ASSEMBLY OF INTERCONNECTED AND RELATIVELY MOVABLY DISPLACEABLE MOLDED PARTS

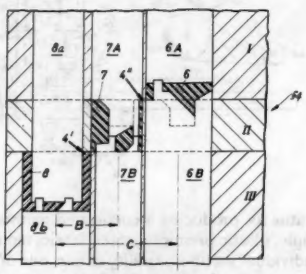
Helmut E. Schneider, Mainz, Rhine, Germany, assignor to Firma Werner & Mertz GmbH, Mainz, Rhine, Germany

Filed Nov. 13, 1969, Ser. No. 876,500

Claims priority, application Germany, Nov. 16, 1968, P 18 09 317.9

Int. Cl. B29c *25/00, 27/00*

U.S. Cl. 425—109 **3 Claims**



A method of producing plastic articles which are assembled from a plurality of parts produced by injection into a mold includes forming the parts in mold cavities providing web portions for interconnecting the molded parts and holding them in an orientation from which they can be easily assembled and thereafter joining the molded parts together by moving them into juxtaposition while severing the connecting webs either when they are still in the mold or when they are removed from the mold. The molding apparatus advantageously includes, in one embodiment, a first molding cavity for one of the parts and a working plate forming cavities for one or more additional parts at locations spaced from the first cavity and providing a joining connection between the first cavity and the additional cavities for the other parts. The work plate is movable to present each additional part in succession into alignment with the molded part of the first cavity so that they can be pushed into the first molded part by suitable movable elements. In an alternate construction two or more separate mold parts are formed such that they provide means for molding individual parts in axial alignment. The construction is such that a mold cavity is defined which provides for a formation of an aligning shaft member which is first positioned through a bore of each of the parts after they are molded to hold them in proper orientation and thereafter these parts are moved together axially to place them into juxtaposition.

3,685,934

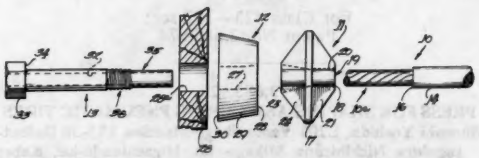
ANCHORAGE SYSTEM FOR STRESSING CONCRETE

Hugh Dana Huber, Lisle, and Jack C. Edgren, Naperville, both of Ill., assignors to Conenco International Limited, Don Mills, Ontario, Canada

Filed Oct. 6, 1969, Ser. No. 864,119

Int. Cl. B28b *7/02*

U.S. Cl. 425—111 **9 Claims**



Strand steel cable provided with a plastic jacket is placed in position prior to the pouring of concrete. An anchor member having a conical seating aperture and an internally-threaded portion is placed over the cable, followed by a solid rubber grommet having a frusto-conical shape. A steel sleeve of closed cross section is then passed over the cable through the form bulkhead and the grommet, and is threadably received in the anchor member. The steel sleeve is then tightened to draw, compress the grommet against the bulkhead and the conical seating aperture and sleeve from grout.

3,685,935

APPARATUS FOR MANUFACTURING BEARINGS THAT ARE TO BE USED PARTICULARLY IN THE WATCHMAKING INDUSTRY AND FOR SMALL APPARATUSES

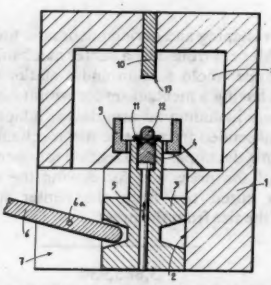
Janos Kurucz, Rte. Neuve 21, Orient, Vaud, and Andre Matthey, Les Jeannerets 33, Le Locle, Neuchatel, both of Switzerland

Filed March 3, 1971, Ser. No. 120,646

Claims priority, application Switzerland, Mar. 10, 1970, 3453/70; Sept. 29, 1970, 14526/70

Int. Cl. B29c *3/00, 6/00*

U.S. Cl. 425—116 **8 Claims**



A thermoplastic bearing and method of making same for use particularly in the watchmaking industry and for small apparatuses wherein the bearing body is installed on the tip of an axially movable punch with the punch penetrating slightly into the inside of the body, and a piece of thermoplastic material is placed on the body which body and material are then heated until the material softens whereupon the punch together with the bearing body and thermoplastic material are moved axially toward a second punch placed coaxially and upside down with respect to the first punch so as to allow the piece of thermoplastic material to leave the heating zone just before molding, and the material between the two punches is then

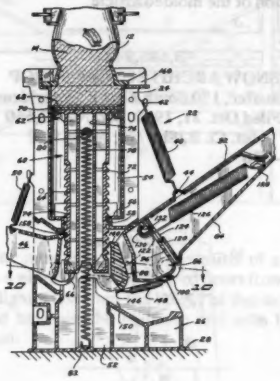
squeezed, the material being cooled instantaneously by contact with the second punch during molding.

3,685,936

TOY EXTRUDER

Harry Meth, and Allen A. Greenberg, both of Cincinnati, Ohio, assignors to Rainbow Crafts, Inc.

Filed Jan. 12, 1970, Ser. No. 2,126
Int. Cl. B29f 3/00
U.S. Cl. 425—195 11 Claims



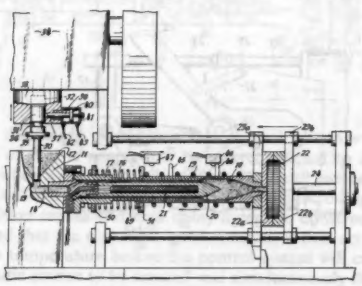
A toy extruder which includes a chamber having a movable plunger therein for forcing a soft moldable material out of the chamber into a mold detachably secured to the extruder. A handle member is pivotally connected to the extruder in such a manner that it engages a portion of the plunger so as to impart relative movement to the plunger and force the material out of the chamber into the mold. A molded object is thus formed by separating the mold from the extruder after it has been completely filled with the material, and removing the mold from the object.

3,685,937

INJECTION MOULDING APPARATUS WITH DYNAMIC IMPACT INJECTION ASSIST MEANS AND CONTROL THEREFOR

Thomas Paul Engel, 6056 Heusenstamm, Offenbach M., Germany

Filed Feb. 25, 1970, Ser. No. 14,012
Claims priority, application Great Britain, March 5, 1969, 11,732/69; Dec. 10, 1969, 60,290/69
Int. Cl. B29f 1/06
U.S. Cl. 425—167 4 Claims



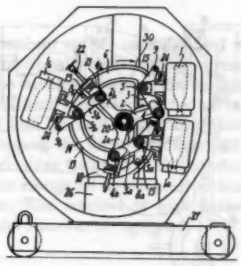
The disclosure relates to the shaping of materials typically plastics materials which comprises introducing the material into a compression chamber, heating the material within the chamber to a moulding or extrusion temperature, injecting material from said chamber into a mould or through a die and imparting at least during said injection a plurality of dynamic impacts to the material within the compression chamber. The material may be shaped by injection into a mould and the injection may be effected by moving the mould relative to the body of the material within the compression chamber the plurality of dynamic impacts serving to assist in the filling of the mould by the material.

3,685,938

APPARATUS FOR FORMING HOLLOW BODIES

Serge Lagoutte, Chalon-sur-Saone, France, assignor to Societe d'Etudes Verrieres Appliquees "S.E.V.A.", Neuilly-sur-Seine (Hauts-de-Seine), France

Filed Aug. 7, 1970, Ser. No. 61,998
Claims priority, application France, Aug. 12, 1969, 6927662
Int. Cl. B29c 3/00; B29d 23/03
U.S. Cl. 425—185 4 Claims



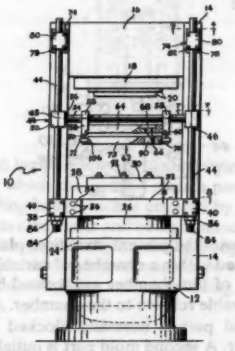
A machine for blow molding hollow bodies such as bottles from extruded tubular plastic material includes a plurality of molds which are guided over a closed path including a straight portion coaxial with the extruder by means of a first follower constrained to follow a closed loop path and second and third followers engaging with guide surfaces which extend over fractions of a closed loop path.

3,685,939

MOLD SEPARATING APPARATUS

Thomas A. Weir, 5809 29th Ave. N., Minneapolis, Minn.

Filed July 29, 1970, Ser. No. 59,193
Int. Cl. B30b 7/02, 15/14
U.S. Cl. 425—214 2 Claims



The main ram of a press advances a bottom mold plate toward a fixedly located top mold plate. During the advancing stroke, a third or floating plate is engaged by the bottom mold

plate and urges it upwardly into juxtaposition with the top plate. Attached so as to be movable in unison with the third or floating plate (or with any additional such plates when employed) are a number of shuttle bars having stops at one end thereof that are shifted so as to be engaged by the supporting frame for the bottom plate during the return stroke of the ram. In this way, the third plate is forcibly separated from the top plate during the retraction of the bottom plate. A frictional drag is imposed on the shuttle bars, there being a brake device for each shuttle bar.

3,685,940

CLAY INJECTION MOLDING MACHINE

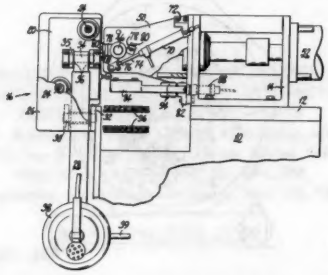
Arthur Bradshaw, and Dennis Podmore, both of Argyle Works, Leek New Rd., Stoke-on-Trent, England

Filed July 23, 1970, Ser. No. 57,466

Claims priority, application Great Britain, Aug. 2, 1969, 38,815/69; Dec. 27, 1969, 62,995/69; Feb. 25, 1970, 9,072/70

Int. Cl. B28b *1/24*

U.S. Cl. 425—218 **13 Claims**



Moist plastic clay is formed in the manufacture of articles of ceramic ware by injecting clay which is in a temporary state of fluidity (fluidized) into a mould cavity. A charge of clay is provided in a chamber and subjected to an impact by an impact plunger which fluidizes the clay and causes it to flow from the chamber into the mould cavity. The mould cavity is provided by a plurality of dies which are thereafter opened to release the article formed therein.

3,685,941

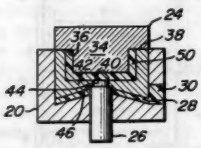
DISPLACEMENT MOLDING PLASTIC ARTICLES

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Division of Ser. No. 679,109, Oct. 30, 1972, Pat. No. 3,590,114. This application May 15, 1970, Ser. No. 48,653

Int. Cl. B29f *1/00*

U.S. Cl. 425—245 **4 Claims**



In accordance with the present invention, plasticized plastic material is confined within a chamber of variable volume, and part of the walls of the chamber are formed by a first mold part which is movable relative to the chamber. A gate opening in the first mold part is normally blocked by a movable blocking member. A second mold part is initially spaced from the first mold part and is moved into contact with the first mold part. There is a mold cavity in the mold parts. At the same time, the blocking member is moved out of the gate opening so that the mold cavity communicates with the plasticized material in the chamber. The first and second mold parts are then moved jointly to reduce the volume of the chamber and thereby inject plasticized material through the gate opening into the mold cavity. Next, the gate opening is closed by the blocking member. The mold parts and the blocking member are moved in the reverse direction to enlarge the chamber to its original volume, and then the first mold part and the blocking member are halted while the second mold part moves further in the reverse direction to its initial position to accommodate ejection of the molded article. In one embodiment, the second mold part includes two members defining the mold cavity, these members being separable to effect ejection of the molded article.

3,685,942

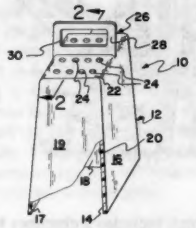
SNOW ARCHITECTURE SCOOP

Jasper Dean Shaffer, 150 South First E., Providence, Utah

Filed Oct. 21, 1970, Ser. No. 82,660

Int. Cl. B28b *7/34*; A23g *5/02*

U.S. Cl. 425—276 **1 Claim**



A device and method for use in producing compacted blocks of snow which can be assembled and shaped into sculptured works or other snow structures, the device comprising a scoop in the nature of an open ended mold having four tapered closed sides and a proximal end wall defining a mold cavity. The proximal end wall contains air holes and a handle to be gripped by the user. Snow blocks are formed in a continuous manner by forcing the open end of the scoop into snow, compacting the snow in the mold cavity of the scoop when the scoop is full of snow by pushing the scoop toward the ground into more snow and jarring the compacted snow from the mold cavity after elevating the scoop.

3,685,943

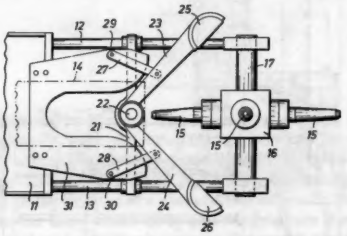
APPARATUS FOR THE MANUFACTURE OF HOLLOW OBJECTS OF THERMOPLASTIC MATERIAL

Stefan Fischer, Im Korresgarten 21, Lohmar (Bez. Cologne), Germany

Filed Aug. 26, 1970, Ser. No. 67,091

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 **14 Claims**



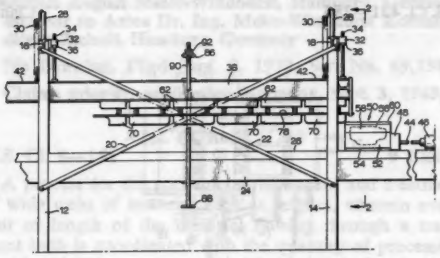
An apparatus for the production of hollow plastic articles including an extruder, an injection mould and a blowing mould, and means opening and closing the moulds being driven by the same drive source.

3,685,944

URETHANE PRESS

Walter Louis Roloff, Listowel, Ontario, Canada, assignor to The Andrew Malcolm Furniture Co., Limited

Filed March 16, 1970, Ser. No. 19,665
Int. Cl. B29c 3/00
U.S. Cl. 425—410 3 Claims



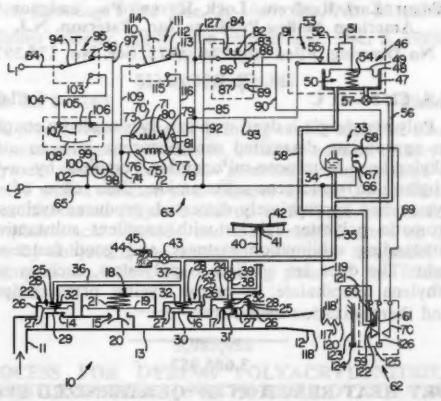
A press for moulding urethane consists of a platform surmounted by a plurality of rolls spaced apart from the platform, a distance slightly less than the height of the mould, the latter being forced between the platform and rolls by means of a hydraulic ram.

3,685,945

PNEUMATIC FUEL CONTROL SYSTEM AND METHOD OF OPERATING THE SAME

Arthur L. Good, c/o Robertshaw Controls Co., Midwest Development Center, P.O. Box 435, Elkhart, Ind.

Filed July 24, 1970, Ser. No. 64,064
Int. Cl. F23n 5/00
U.S. Cl. 431—6 20 Claims



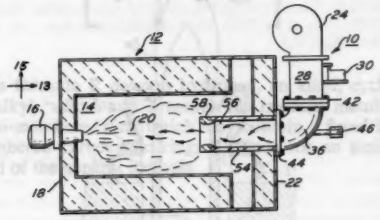
This disclosure relates to a fuel control system wherein a source of fuel is adapted to be interconnected to a burner means when a pneumatically operated actuator means is interconnected to a pneumatic source, the system including electrical ignition means and time delay means so constructed and arranged that the electrical ignition means is first actuated to ignition temperature before the control system will cause the pneumatic source to be created and simultaneously therewith will initiate operation of a time delay means so that if the main burner means is not ignited within a predetermined time period after the fuel first issues therefrom, the time delay means will terminate the operation of the control system.

3,685,946

COMBUSTION CHAMBER SUPPLEMENTAL AIR SUPPLY ASSEMBLY AND METHOD

Jack C. Adams, Philadelphia, Pa., assignor to Ecological Controls, Inc., Penndel, Pa.

Filed Nov. 12, 1970, Ser. No. 88,819
Int. Cl. F23c 7/00
U.S. Cl. 431—8 20 Claims



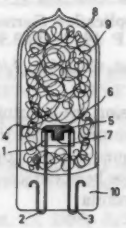
A supplemental air supply assembly and method for transporting and directionally orienting high pressure air impingement on a flame envelope within a combustion chamber. Ambient air is introduced into a fan connected to a conduit which forces inlet air into the combustion chamber. The inlet air is positioned to oppose the flame envelope and is vortexed by a series of angled vanes fastened to the conduit. The air is preheated within an elongated sleeve prior to interaction with the flame envelope. The amount of high pressure inlet air introduced into the chamber is regulated.

3,685,947

PHOTOFLASH LAMP

Charles Cornelis Eduard Meulemans, and Johannes Cornelis Van Der Tas, both of Terneuzen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 5, 1970, Ser. No. 77,801
Claims priority, application Netherlands, Oct. 13, 1969, 6915476
Int. Cl. F21k 5/02
U.S. Cl. 431—95 2 Claims



A photoflash lamp employing ignition by means of electrical breakdown in which the ignition mass is provided on an electrically insulating body which is covered by two thin layers of metal serving as electrodes and being connected to the current conductors. The electrically insulating body including the ignition mass is provided within the envelope which furthermore contains a metal wire filling and an oxidizing gas.

3,685,948

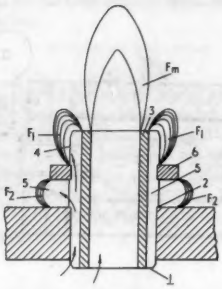
Patent Not Issued For This Number

3,685,949

AERATED GAS BURNERS

Derek Vincent Greaves, Brockhurst, Egypt Lane, Farnham Common, England

Filed Dec. 18, 1970, Ser. No. 99,415
Int. Cl. F23d *13/24*
U.S. Cl. 431—349 3 Claims



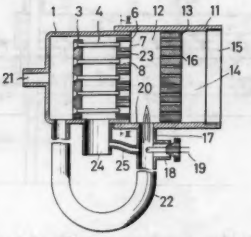
An aerated gas burner jet comprising a hollow tube with at least one external axial flute the tube being adapted to fit or sit in a port of a burner, preferably a drilled-port bar burner or a circular cast-iron ring burner, so that the flow of gas through the port passes both through the hollow tube and along the flute or flutes. The stability of the gas flames is improved by the provision of a ring or washer transversely disposed to and at least partly blocking the flute or flutes, the ring or washer causing the gas stream to be split into two.

3,685,950

COMBUSTION APPARATUS FOR MIXING FUEL AND AIR IN DIVIDED PORTIONS

Tamotsu Nomaguchi; Norikazu Tobata, and Toshio Ito, all of Amagasaki, Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed June 19, 1970, Ser. No. 47,668
Claims priority, application Japan, June 23, 1969, 44/49578; July 3, 1969, 44/52720; Nov. 10, 1969, 44/89894
Int. Cl. F23d *15/02*
U.S. Cl. 431—285 7 Claims



Apparatus for feeding fuel gas and air portionally into a combustion chamber for obtaining improved fuel-air mixing efficiency in which at least one of the fuel gas and air is forcibly injected into the combustion chamber and including a heat catalyst in the combustion chamber to produce steady and gentle combustion of a high load factor.

CHEMICAL

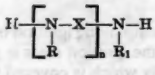
3,685,951

INCREASING DYESTUFF AFFINITY OF NATURAL POLYAMIDES BY ADDING WATER-SOLUBLE POLYAMIDES TO AQUEOUS BATH

Ergun Tamer, Bergisch Neukirchen, Udo Hendricks, Cologne, and Mathieu Quaedvlieg, Opladen, Germany (all % Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany)

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,918
Claims priority, application Germany, Feb. 27, 1969, P 19 09 963.9
Int. Cl. D06p *1/36*
U.S. Cl. 8—31 6 Claims

Process for increasing the dyestuff affinity of fibre materials of natural polyamides consisting in treating the fibre materials with an aqueous bath containing water-soluble polyamides which have been obtained by reacting aliphatic polyamines of the formula



in which R and R_1, independently of one another, stand for hydrogen, a C_1–C_5-alkyl group or a hydroxyalkyl group with 1–3 carbon atoms; X denotes a bivalent, optionally substituted aliphatic radical with 1–6 carbon atoms; and *n* stands for an integer from 1 to 4, with α,β-unsaturated aliphatic monocarboxylic acids, or with aliphatic polycarboxylic acids which may contain hetero atoms, or with their functional derivatives capable of forming amides.

3,685,952

COLORATION OF POLYESTER TEXTILE FIBERS WITH AZO DYES

Edgar Earl Renfrew, Lock Haven, Pa., assignor to American Aniline Products, Inc., Paterson, N.J.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,397
Int. Cl. D06p *1/18*
U.S. Cl. 8—41 C 6 Claims

Polyester fabric is dyed with azo dyes made by coupling an appropriate diazotized aminobenzene into an α-(N-alkylanilino)-m-toluene-sulfonamide, typified by α-(N-ethylanilino)-m-toluene-sulfonamide. This class of azo dyes, when appropriately dispersed, produces dyeings on aromatic polyester fabrics with excellent substantivity, outstanding sublimation fastness, and good fastness to light. The dyes are applied to polyesters, such as polyethylene terepthalate, by carrier dyeing, pressure dyeing and thermofixation methods.

3,685,953

DRY HEAT REACTION OF QUATERNIZED EPOXIDES AND QUATERNIZED CHLOROHYDRINS WITH HYDROXYLATED TEXTILES

Georges Cuvelier, Sotteville-les-Rouen, and Daniel Wattiez, Saint-Etienne-du-Rouvray, France, assignors to Institut Textile de France, Boulogne-sur-Seine, France

No Drawing. Filed Aug. 27, 1969, Ser. No. 853,543
Claims priority, application France, Aug. 30, 1968, 164,694
Int. Cl. D06m *13/34*
U.S. Cl. 8—115 9 Claims

Hydroxylised polymers with modified dyeing properties and having hydroxyl groups replaced at least partially by

quaternary ammonium groups are provided. These polymers may be made by impregnating a hydroxylised polymer with an aqueous solution containing an epoxypropyl quaternary ammonium salt or a precursor thereof.

3,685,954

CONTINUOUS PROCESS FOR THE TREATMENT OF MOVING FABRIC WEBS OF MATERIAL

Christian August Meier-Windhorst, Hamburg, Germany, assignor to Artos Dr. Ing. Meier-Windhorst Kommanditgesellschaft, Hamburg, Germany

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,138

Claims priority, application Germany, Sept. 3, 1969, P 19 44 567.1

Int. Cl. B05c *11/12*

U.S. Cl. 8—151 9 Claims

A process for the continuous refinement and treatment of wide webs of material such as textiles, wherein every unit of length of the material flowing through a treatment bath is coordinated with the quantity of processing liquid which is synchronous with identical chemicals in an initial state that can be extended or rejuvenated by additional treatment during the exhaustion or consumption of the processing liquid. The processing liquid is removed from the batch following the efflux of the batch of material from the processing apparatus so that as the last of the processing fluid is removed, a cleansing liquid is introduced to clean the processing apparatus and remove all traces of the processing liquid.

3,685,955

SYNTHETIC FIBER DYEING WITH HEXAMETHYL PHOSPHORIC ACID TRIAMIDE AND CHLORINATED ETHYLENE SOLUTION OF DISPERSE DYE

Branimir Milicevic, Riehen, and Alfred Litzler, Itingen, Switzerland, assignors to Ciba-Geigy AG

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,623

Claims priority, application Switzerland, Dec. 5, 1968, 18,197/68

Int. Cl. D06p *5/04*

U.S. Cl. 8—163 7 Claims

A process for dyeing or printing textile material made of linear polyester, polyamide, cellulose acetate or acrylic polymers wherein the textile material is impregnated or printed with a solution of a disperse dyestuff in a mixture of a chlorinated ethylene and up to 50% of hexamethyl phosphoric acid triamide, and the dyestuff is fixed on the fibre by subjecting the material to a heat treatment at a temperature below the softening point of the fibrous material.

3,685,956

PROCESS FOR DYEING POLYACRYLONITRILE TEXTILE MATERIALS WITH BASIC DYESTUFFS

Roderich Raue, Bertha von Suttner-Str. 48, and Hans-Peter Kuhlthau, Friedrich Bayer-Str. 5, both of Leverkusen, Germany

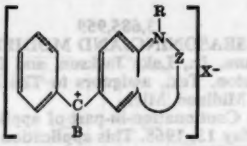
No Drawing. Original application Apr. 15, 1968, Ser. No. 721,177. Divided and this application Sept. 25, 1970, Ser. No. 75,767

Claims priority, application Germany, Apr. 24, 1967, F 52,230

Int. Cl. D06p *3/70*

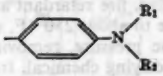
U.S. Cl. 8—177 AB 3 Claims

Process for dyeing and printing of textile materials of polyacrylonitrile with phenyl-heteryl-methane dyestuffs and the production of phenyl-heteryl-methane dyestuffs of the general formula



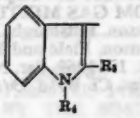
(I)

In this formula R denotes hydrogen, an alkyl, cycloalkyl or aralkyl radical and Z means the residual members of 5- or 6-membered ring which may contain a fused further 6-membered carbocyclic ring; B stands for an aminoaryl radical of the general formula



(II)

in which R_1 denotes hydrogen, an alkyl, aralkyl, cycloalkyl or aryl radical and R_2 means an alkyl, cycloalkyl or aralkyl radical, and in which alkyl radicals R_1 and R_2 may be fused to form a ring, possibly with the inclusion of further hetero atoms, or B stands for an indole radical of the general formula



(III)

in which R_3 denotes hydrogen, an alkyl or aryl group, a carboxylic acid ester group, an optionally N-substituted carbonamide group or an alkoxy group, and R_4 means hydrogen, an alkyl, aralkyl, cycloalkyl or aryl radical; X stands for an anionic radical.

3,685,957

PROCESS FOR DYEING POLYESTER FIBERS WITH NITRODIPHENYLAMINE DYESTUFF

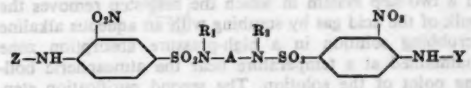
Hans Alfred Stingl, Toms River, N.J., assignor to Toms River Chemical Corporation, Toms River, N.J.

No Drawing. Continuation-in-part of application Ser. No. 698,099, Jan. 16, 1968. This application July 10, 1970, Ser. No. 54,020

Int. Cl. D06p *3/52*

U.S. Cl. 8—179 3 Claims

Polyester fibers dyed with nitrodiphenylamine dyestuffs of the formula



in which A is a single bond or a divalent radical and R_1 and R_2 are hydrogen, an alkyl, cycloalkyl, or phenyl and Y and Z are residues of an amine; are yellow dyestuffs particularly suitable for the dyeing and printing of synthetic fibers.

3,685,958
Patent Not Issued For This Number

3,685,959
WOOD SEASONING AND MODIFICATION

James L. Dunn, Jr., Lake Jackson, and Harold G. Liddell, Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

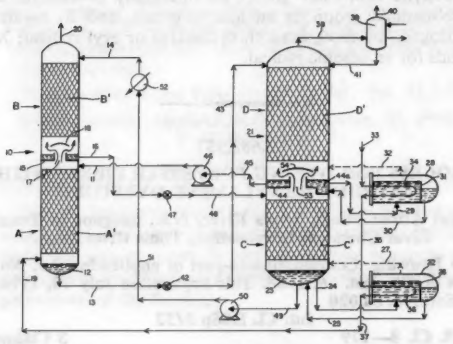
No Drawing. Continuation-in-part of application Ser. No. 728,755, May 13, 1968. This application Apr. 24, 1969, Ser. No. 819,518
Int. Cl. B27k *3/08, 3/40*
U.S. Cl. 21—7 16 Claims

A process for seasoning and/or modifying wood which comprises impregnating wood to be seasoned with a halogenated hydrocarbon solvent or wood to be seasoned and modified or only modified with a halogenated hydrocarbon solvent which contains a wood modifying chemical e.g., wood preservative, fire retardant and/or colorant, at ambient temperature to about 250° F. under atmospheric or super-atmospheric pressure, removing excess solvent, including excess modifying chemical, from the wood, and subjecting the so-impregnated wood to a heating fluid, e.g., the vapors of water or a halogenated hydrocarbon solvent, to remove the impregnant solvent and, if seasoning, water and removing the so-vaporized solvent and water from association with the wood.

3,685,960
SEPARATION OF CO_2 AND H_2S FROM GAS MIXTURES

Homer E. Benson, Pittsburgh, Pa., assignor to Benson, Field and Epes

Filed Sept. 19, 1969, Ser. No. 859,466
Int. Cl. B01d *53/34*
U.S. Cl. 423—229 5 Claims



Method for removing CO_2 and H_2S from gas mixtures in a two-step system in which the first step removes the bulk of the acid gas by scrubing with an aqueous alkaline scrubbing solution in a high-pressure absorption zone maintained at a temperature near the atmospheric boiling point of the solution. The second purification step, where the acid gas content is reduced to low residual levels, is carried out by contacting the partially purified gas in a second, separate high-pressure absorption zone with a second aqueous scrubbing solution having a different composition than the first and comprising potassium carbonate containing at least about 6% by weight of an alkanolamine, the solution temperature in the second step being maintained at an intermediate absorption temperature of from about 50° C. to 90° C., and preferably 60° C. to 80° C.

3,685,961
EXTRACTION OF BERYLLIUM FROM ORES

James K. Grunig and William B. Davis, Tucson, Ariz., and William C. Aitenhead, Belize City, British Honduras, assignors to The Anaconda Company, New York, N.Y.

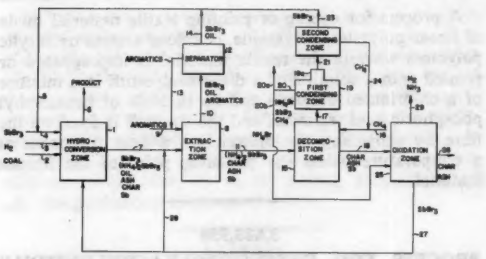
Continuation-in-part of application Ser. No. 710,984, Mar. 3, 1968, which is a continuation-in-part of application Ser. No. 316,474, Oct. 15, 1963, now Patent No. 3,395,975. This application Dec. 21, 1970, Ser. No. 99,753
Int. Cl. C22b *59/00*
U.S. Cl. 423—127 2 Claims

The extraction and the recovery of beryllium substantially devoid of zinc and other impurities from low and medium grade acid-leachable beryllium bearing ores is accomplished by acid leaching at a pH in the range from 1.2 to 2, preferably between 1.3 and 1.5, and advantageously with the aid of a soluble fluoride additive, followed by raising the pH of the leach liquor in two successive steps, initially to below about 4.5 and finally to below 9.0, to precipitate beryllium hydroxide relatively free from impurities. In the initial pH raising step, aluminum is precipitated from the leach solution. The precipitated beryllium hydroxide is further purified by redissolution and hydrolysis in sodium hydroxide solution. Zinc is removed from the final beryllium product by treating the sodium hydroxide solution with a soluble sulfide before the hydrolysis of the redissolved beryllium hydroxide.

3,685,962
REGENERATION OF METAL HALIDE CATALYST

Thomas E. Kiovsky, El Sobrante, and Wilfried J. Petzny, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 31,987
Int. Cl. C01g *9/04*; C01c *1/16*
U.S. Cl. 423—107 2 Claims



A process is disclosed for recovering metal halide from a metal halide-ammonium halide complex by heating the complex in a thermal decomposition zone and passing the resulting vapor phase serially through at least two condensing zones, the first condensing zone being maintained at a temperature at which the higher boiling of the metal halide and the ammonium halide decomposition products condenses and the lower boiling of the two is in vapor phase, and the second condensing zone being maintained at a temperature where the lower boiling decomposition product condenses.

3,685,963
PROCESS FOR PREPARATION OF FAUJASITE-TYPE ZEOLITES

Friedrich Schwochow, Leverkusen, Gerhard Heinze, Schildgen, and Horst Weber, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 25, 1969, Ser. No. 879,913
Claims priority, application Germany, Dec. 3, 1968, P 18 12 339.2
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 4 Claims

Process for the preparation of zeolites which have the crystal structure of faujasite and a composition of the formula:

$$Na_2O \cdot Al_2O_3 \cdot (3.5 \pm 0.5) SiO_2 \cdot nH_2O$$

(n=0 to 8) by hydrothermal crystallisation of reaction mixtures which contain Na_2O, Al_2O_3, SiO_2 and H_2O at temperatures of 20 to 120° C., characterised in that the composition of the reaction mixtures, expressed as molar ratios of the oxides, lies within the limits of

SiO_2/Al_2O_3	4 to 7
Na_2O/SiO_2	0.4 to 0.7
H_2O/Na_2O	30 to 50

the SiO_2 being used in the form of active silicic acid products with specific surfaces of the SiO_2 particles of between 150 and 250 m.²/g. (according to BET) and the Al_2O_3 being in the form of sodium aluminate.

3,685,964
PURIFICATION OF ALKALI PHOSPHATE SOLUTION

Theodore Leo Treitler, Millburn, N.J., assignor to FMC Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 733,267, May 31, 1968. This application Dec. 9, 1970, Ser. No. 96,592
Int. Cl. C01b *25/30*
U.S. Cl. 427—158 9 Claims

A method is provided for purifying aqueous alkali phosphate solutions produced from wet-process phosphoric acid and containing less than 10,000 p.p.m., usually 50–1,000 p.p.m., of iron by treating them with alkali sulfides or hydrogen sulfide at pH 6.5 to 9 to remove undesirable metal ions, particularly iron.

3,685,965
REDOX PRECIPITATION OF NONFERROUS HEAVY METALS FROM AQUEOUS SOLUTION

Elmar Kniprath, Hamburg, Germany, assignor to Norddeutsche Affinerie

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,295
Claims priority, application Germany, Dec. 3, 1968, P 18 12 332.5
Int. Cl. C01g *45/02, 49/02, 51/04*
U.S. Cl. 423—605 9 Claims

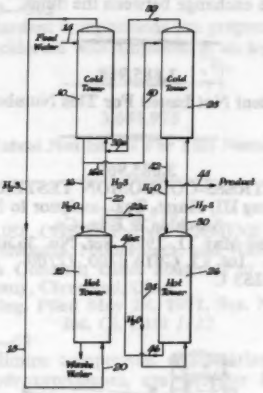
Metals such as manganese and cobalt are precipitated from aqueous solution in the form of their higher valence hydroxides, hydrated oxides or oxides by introducing into the solution free-oxygen and a reducing agent, especially sulfur dioxide or a sulfite, while maintaining the pH of the solution between the precipitation pH of the lower valence and that of the higher valence precipitate.

3,685,966
PRODUCTION OF HEAVY WATER

Victor R. Thayer, R.D. 3, Newark, Del. 19711

Filed Aug. 4, 1969, Ser. No. 847,306
Int. Cl. C01b *5/02, 17/16*
U.S. Cl. 423—580 8 Claims

Heavy water is concentrated by dual temperature exchange between hydrogen sulfide and water. The concentration is accomplished in a multi-stage system, utilizing process parameters requiring a higher temperature hot zone, a reduced recovery of the product from the

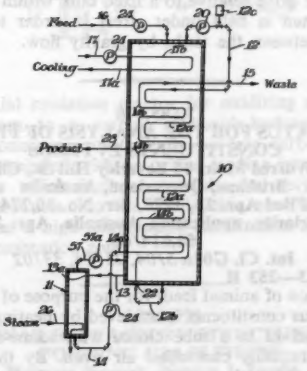


feed water relative to the recovery theoretically possible, and limiting the increase in concentration per stage to a factor of less than 4. These operating parameters permit a substantial reduction in capital cost of the system.

3,685,967
PROCESS AND APPARATUS FOR CONCENTRATING ISOTOPES BY THE SIMULTANEOUS EXCHANGE OF HEAT AND MASS

Victor R. Thayer, R.D. 3, Newark, Del. 19711

Filed Aug. 4, 1969, Ser. No. 847,307
Int. Cl. B01d *59/32*; C01b *5/02*; C07c *141/00*
U.S. Cl. 423—580 9 Claims



The method and apparatus disclosed relates to the production of a concentrate of an isotope of an element by chemically exchanging at different temperatures isotopes of the same element between chemically different fluids which are physically separable from each other and which are capable of containing each of the isotopes. According

to the method, both heat and isotopes are exchanged between the fluids simultaneously while the fluids are flowing countercurrently with respect to each other within a temperature gradient. Conduits positioned within an exchange tower recirculate one or both of the fluids to permit simultaneous direct and indirect heat exchange as well as isotope exchange between the fluids.

3,685,968

Patent Not Issued For This Number

3,685,969

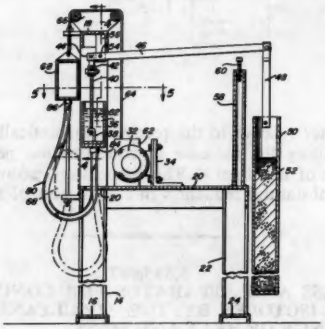
STRESS-CORROSION TESTER

John Young III, Hurst, Tex., assignor to Murdock Machine & Eng. Co.

Filed May 11, 1970, Ser. No. 36,012

Int. Cl. G01n *3/00, 17/00*

U.S. Cl. 23—253 C **8 Claims**



A specimen under a continuous stress is intermittently immersed in a corrosive fluid for testing of material strength under corrosive conditions. A storage tank of corrosive fluid is periodically elevated and then lowered by a motor drive relative to a fixed tank within which the test specimen is held under stress in order to transfer the fluid between the tanks by gravity flow.

3,685,970

APPARATUS FOR THE ANALYSIS OF FIBROUS CONSTITUENTS IN FEEDS

Kenneth Wilfred Moir, 84 Beverley Hill St., Clifton Hill, Brisbane, Queensland, Australia

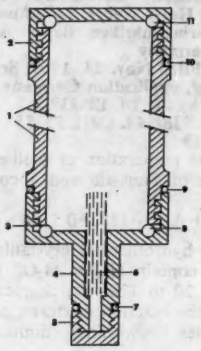
Filed Apr. 22, 1970, Ser. No. 30,774

Claims priority, application Australia, Apr. 28, 1969, 54,014/69

Int. Cl. G01n *5/04, 25/14, 33/02*

U.S. Cl. 23—253 R **1 Claim**

Extraction of animal feeds for the purpose of measuring their fibrous constituents is achieved by heating a sample with extractant in a tube closed with screw-on caps in a thermostatically controlled air oven. By these means are avoided variation due to altitude in the boiling point of an extractant and the high heat input which is required to overcome latent heat of evaporation. One of the screw-on caps on the body of the tube is integral with a smaller capped tube extending externally and containing a wick extending internally. Upon removing appropriate caps spent extractant is forced through the wick by pressure leaving behind the fiber residue. The screw-on caps are optionally fitted with external seals to prevent absorption of atmospheric moisture during weighing of the fibrous residue. Otherwise the residue is transferred for weighing



and subsequent ashing. The wicks used for filtering are economicaly disposable after each determination.

3,685,971

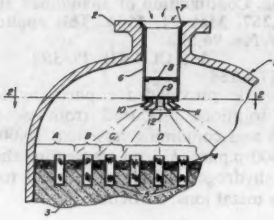
FLOW DISTRIBUTING APPARATUS

Don B. Carson, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 6, 1970, Ser. No. 52,163

Int. Cl. B01j *9/04*; B05b *1/14*

U.S. Cl. 23—288 R **6 Claims**



A flow distributor system for handling a mixed vapor-liquid flow to the top of a contact bed in a reactor chamber. The distributor utilizes transverse perforate plate means or other stream mixer means upstream of the discharge end and depending from the latter are a plurality of spaced apart concentric baffles that flare outwardly in a frusto-conical manner. The angle of flare for each baffle member can vary one from another to provide the desired proportional distribution of the mixed phase stream across the top of the bed in the contact chamber.

3,685,972

CATALYTIC CONVERTER CONSTRUCTION

Ted V. De Palma, Rte. 3, Box 294, Roselle, Ill. 60172; Albert J. Brons, 533 S. Princeton Ave., Villa Park, Ill. 60181; and Martin W. Perga, 576 Edgefield Lane, Hoffman Estates, Ill. 60172

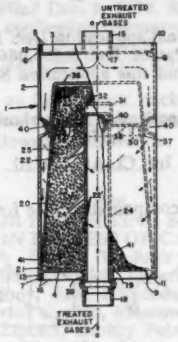
Filed Sept. 18, 1969, Ser. No. 858,917

Int. Cl. F01n *3/14*; B01j *9/04*

U.S. Cl. 23—288 F **7 Claims**

A catalytic converter for treating exhaust gas streams adapted for engine compartment installation and encompassing a design that will withstand stresses due to temperature differentials within the converter by utilizing a symmetrical design with slideable parts. In a preferred

arrangement the converter has a catalyst reservoir therein which serves as storage for fresh catalyst particles that



flow into the catalyst retaining section, replacing particles lost by attrition.

3,685,973

METHOD FOR CRUCIBLE-FREE ZONE MELTING USING A DISPLACED HEATER

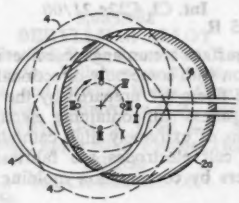
Wolfgang Keller and Konrad Reuschel, Pretzfeld, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Continuation of abandoned application Ser. No. 645,998, June 14, 1967. This application Sept. 16, 1970, Ser. No. 72,878

Claims priority, application Germany, June 15, 1966, S 104,290

Int. Cl. B01j *17/10*

U.S. Cl. 23—301 SP **8 Claims**



In a method of zone melting a semiconductor rod, the rod is substantially vertically supported at one end by a first end holder located in the substantially vertical axis of the rod, a seed crystal being attached to the other end of the rod and having a free end supported by a second end holder, and a molten zone is formed in the rod by an annular heating device surrounding the rod and dividing it into two rod portions, the annular heating device and the rod being moved relative to one another in the axial direction of the rod from the seed crystal to the first end holder so that one of the portions of the rod is supplied to the melt and the other portion thereof crystallizes out of the melt. The improvement in the method includes laterally displacing the annular heating device to a position eccentric to the axis of the rod but nevertheless still surrounding the rod, and maintaining the eccentric relationship of the annular heating device to the rod for at least part of the molten zone pass along the rod.

3,685,974

PROCESS FOR THE PREPARATION OF PHOSPHORYL TRIAMIDE

Michael A. Silvestri, Cranston, R.I., assignor to Sun Chemical Corporation, New York, N.Y.

No Drawing. Filed May 28, 1970, Ser. No. 41,633

Int. Cl. C01b *25/00*; C09d *5/18*

U.S. Cl. 423—302 **3 Claims**

Flame-retardant compositions are prepared by reacting phosphoryl chloride with ammonia in an aqueous system.

3,685,975

Patent Not Issued For This Number

3,685,976

MOTOR FUEL CONTAINING DIIMINE ADDITIVES

Jan H. Vis, Hengelo, Netherlands, and Wallace R. Loder, Jr., North Olmsted, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed May 24, 1971, Ser. No. 146,541

Int. Cl. C10l *1/22*

U.S. Cl. 44—69 **5 Claims**

Certain diimine compounds, characterized as the 1,3-diimino-2-hydroxypropanes, are effective for improving the antiknock performance and ignitability of motor fuels employed in high compression, spark-ignition-type engines.

3,685,977

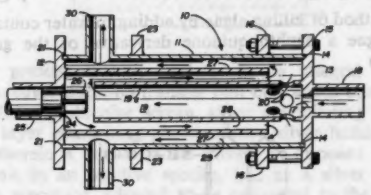
PARTIAL OXIDATION OF HYDROCARBONS

Robert C. Goodman, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 16, 1969, Ser. No. 816,749

Int. Cl. C10g *9/04*; F23d *11/44*

U.S. Cl. 48—107 **8 Claims**



A partial oxidation reactor for oxidizing a hydrocarbon stream to a carbon monoxide-hydrogen product stream containing substantially no free carbon. The reactor is equipped with an orifice leading into a combustion zone which includes conduits for recycling combustion products into the combustion zone adjacent the orifice, and a high temperature stabilization zone following the combustion zone.

3,685,978

LAMINAR REFRACTORY STRUCTURES FOR FORMING GLASS FIBERS

James H. Hansen, Newark, Nelson J. Leedy, Heath, and Robert O. Slonaker, Reynoldsburg, Ohio, assignors to Owens-Corning Fiberglas Corporation

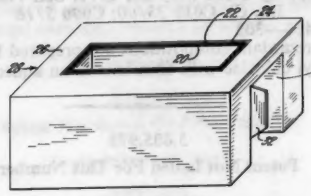
Continuation-in-part of application Ser. No. 880,625, Nov. 28, 1969. This application Dec. 31, 1969, Ser. No. 889,461

Int. Cl. C03b *37/02*

U.S. Cl. 65—1 **5 Claims**

Glass fiber forming apparatus adapted to receive and emit molten glass, which apparatus has a high density coat-

ing of a refractory material of sufficient thickness to retain oxides of the platinum group metals which form and



migrate from the apparatus during service at high operating temperatures.

3,685,979

Patent Not Issued For This Number

3,685,980

ALGICIDAL METHOD

Otto Scherer, Bad Soden, Taunus, and Hans Rochling, Konigstein, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

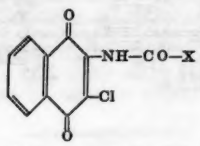
No Drawing. Filed Apr. 28, 1969, Ser. No. 819,981

Claims priority, application Germany, May 15, 1968, P 17 68 447.8

Int. Cl. A01n *23/00*

U.S. Cl. 71—67 **7 Claims**

A method of killing algae by adding to water containing said algae a naphthoquinone derivative of the general formula



in which X stands for $CH_{(3-n)}Cl_n$, CF_3, or $CF_2 \cdot OCH_3$ (n being 2 or 3).

3,685,981

COMBATING UNWANTED VEGETATION WITH N-DIMETHYLOXAZOLYL SULFANILAMIDES

Loren W. Hedrich, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Nov. 7, 1969, Ser. No. 874,999

Int. Cl. A01n *9/00*

U.S. Cl. 71—88 **3 Claims**

A class of sulfanilamide derivatives previously known as bactericides has been found to have valuable herbicidal properties. In particular, N^1-(4,5-dimethyl-2-oxazolyl) sulfanilamide has been found to be useful in combating perennial Johnson grass.

3,685,982

SUBSTITUTED N-OCTAHYDRO-1,2,4-METHENO-PENTALENYL-(5) UREAS AS HERBICIDES

Claus Dieter Weis and Jurg Rumpf, Basel-Land, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

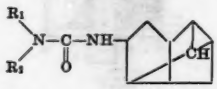
No Drawing. Original application Dec. 18, 1967, Ser. No. 691,200, now Patent No. 3,555,086, dated Jan. 12, 1971. Divided and this application Sept. 4, 1970, Ser. No. 69,891

Claims priority, application Switzerland, Dec. 22, 1966, 18,376/66

Int. Cl. A01n *9/20*

U.S. Cl. 71—119 **7 Claims**

New herbicidal compounds of the formula



in which R_1 and R_2 represent hydrogen or certain substituents are described as particularly suitable for controlling weeds and undesirable grasses. Compositions containing these compounds as active ingredients in mixture with agriculturally acceptable carriers and a method of controlling weeds and undesirable grasses with the aid of such compounds or compositions containing them are also described, as well as novel intermediates which are methenopentalene derivatives from which the compounds of the above formula can be produced.

3,685,983

MANGANESE FIBERS USEFUL FOR GALVANIC CELL ELECTRODES

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,866

Int. Cl. C22c *21/00*

U.S. Cl. 75—.5 R **2 Claims**

Stable, high surface area manganese fibers having a central spine portion with some poly-directional side growths. The manganese fibers are prepared by the electrolysis of a soluble manganese salt-containing electrolyte solution under conditions of extremely high cathode current density. Galvanic cell electrodes are fabricated using the manganese fibers by compression molding techniques.

3,685,984

REMOVING METAL CARBIDES FROM FURNACE SYSTEMS

Gilbert S. Layne and James O. Huml, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,926

Int. Cl. C22b *21/00, 21/04*

U.S. Cl. 75—68 B **4 Claims**

Deposits of metal carbides, such as aluminum carbide, titanium carbide and silicon carbide, frequently accumulate in high temperature furnaces, ladles and conduits utilized in the thermal processing of metals. These highly durable deposits are contacted with molten iron, nickel, or manganese alloy to decompose the deposit and thereby render them sufficiently friable for convenient physical removal.

3,685,985

METHOD FOR THE REMOVAL OF IMPURITIES FROM METALLIC ZINC

Raymond Dobbener and Hans De Haas, Mulheim, Ruhr, Germany, assignors to Duisburger Kupferhutte, Duisburg, Germany

No Drawing. Filed Dec. 8, 1970, Ser. No. 96,235
Claims priority, application Germany, Dec. 13, 1969, P 19 62 608.5
Int. Cl. C22b *19/32, 9/00;* C01b *33/06*
U.S. Cl. 75—86 8 Claims

Impurities such as iron, cobalt, nickel and/or manganess are removed from molten zinc by binding the impurities with silicon followed by separation.

3,685,986

MIXTURE FOR PROTECTING SURFACE OF METAL IN PROCESS OF CASTING

Viktor Savelievich Rutes, Vladimir Konstantinovich Petrov, Aram Aristagesovich Terterian, Mikhail Grigorievich Chigrinov, Erik Rikhardovich Ballad, and Vladimir Borisovich Gankin, Moscow, Serafim Vasilievich Kolpakov, Lipetsk, Dmitry Petrovich Evteev and Anatoly Ivanovich Manokhin, Moscow, Petr Sergeevich Klimashin, Lipetsk, Elena Pavlovna Matevosian and Oleg Vasilievich Nosochenko, Moscow, and Alexandr Sergeevich Lavrov, Lipetsk, U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Institut Chernoi, Metallurgia imeni I. P. Bardina, Moscow, U.S.S.R.

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,412
Int. Cl. C22b *9/10;* B22d *27/18*
U.S. Cl. 75—96 5 Claims

A mixture for protection of the surface of a metal during the casting of this metal comprising graphite in the amount of 5 to 90 percent by weight used as a heat-insulating material and cryolite in the amount of 5 to 30 percent by weight used as a flux-forming material and taken in combination with a boron-containing compound in the amount of 2 to 30 percent by weight.

3,685,987

Patent Not Issued For This Number

3,685,988

BERYLLIUM ALLOY

Jean-Mathieu Frenkel, Paris, Jean-Marie Logerot, Neuilly, Pierre Petrequin, Villebon-sur-Yvette, Robert Syre, Louveclennes, and Michel Weisz, Orsay, France, assignors to Societe Trefimetaux G.P., Paris, France

No Drawing. Filed Oct. 2, 1969, Ser. No. 863,327
Claims prority, application France, Oct. 9, 1968, 169,330
Int. Cl. C22c *25/00*
U.S. Cl. 75—150 8 Claims

The alloy is prepared by adding to the beryllium 0.05% to 3% by weight of calcium and 0.15 to 3% by weight of at least one addition metal selected from the group comprising iron, palladium, gold, platinum, iridium, rhodium, the remainder being essentially constituted by beryllium, the product obtained being subjected to a heat treatment of 1 to 10 hours at 750–1000° C. followed by tempering for a period of 10 to 200 hours at 500–700° C.

3,685,989

AMBIPOLAR PHOTORECEPTOR AND METHOD OF IMAGING

Joseph J. Galen, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1970, Ser. No. 99,430
Int. Cl. G03g *5/02, 13/22*
U.S. Cl. 96—1 PC 6 Claims

An ambipolar photoreceptor member which comprises a substrate and a photoconductive layer overlaying said substrate. The photoconductive layer comprises vitreous selenium or a selenium-arsenic alloy which is doped with a small amount of sodium, lithium, potassium, rubidium, or cesium. The photoreceptor member exhibits satisfactory charge acceptance and discharge for photogenerated charges of either polarity.

3,685,990

SUBSTRATES COATED WITH A POLY(VINYL-HALOBENZAL) BASED COMPOSITION

Raymond H. Young, Jr., Macon, Ga., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 22, 1971, Ser. No. 155,653
Int. Cl. G03g *5/04, 7/00*
U.S. Cl. 96—1.8 11 Claims

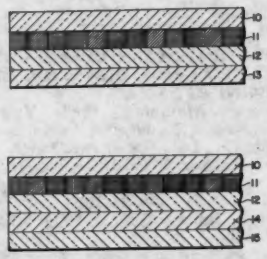
Disclosed herein are substrates coated with a composition comprising a photoconductor, a dye sensitizer and a poly(vinyl-halobenzal) binder.

3,685,991

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

J. Michael Grasshoff, Hudson, and Lloyd D. Taylor, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 8, 1971, Ser. No. 122,043
Int. Cl. G03c *7/14, 5/54*
U.S. Cl. 96—26 31 Claims



The present invention relates to an integral photographic silver diffusion transfer film unit which comprises an additive multicolor screen, silver precipitating nuclei, and a layer comprising photosensitive silver halide crystals, wherein a silver halide solvent is disposed in the film unit in an inactive species, i.e., as a silver halide solvent precursor, adapted to be converted to the active form by the application of a liquid processing composition. Preferably, a compound which releases a silver halide solvent in the presence of alkali is employed, more preferably, a quinone—or naphthoquinone—methide precursor containing the silver solvent moiety. In a particularly preferred embodiment, the film unit also contains a developer or developer precursor.

3,685,992

Patent Not Issued For This Number

3,685,993

LITHOGRAPHIC PLATE WITH RESIN BINDER CONTAINING SILVER SOAP OXIDIZING AGENT

Joan M. W. Mukherjee, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,777
Int. Cl. G03f *7/02,* G03c *1/72*
U.S. Cl. 96—33 9 Claims

Lithographic printing plate containing metal soap oxidizing agent together with complex of high molecular

weight water-soluble organic polymer and polymeric phenolic reducing agent in hydrophilic binder system becomes ink receptive when heated. The system may be made light-sensitive.

3,685,994

PHOTOGRAPHIC METHOD FOR PRINTING A SCREEN STRUCTURE FOR A CATHODE-RAY TUBE

Harry Robert Frey, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 5, 1971, Ser. No. 140,345
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 5 Claims

A photographic method for printing a screen structure for a cathode-ray tube having a supporting surface, a screen structure on the surface and an apertured mask spaced from the screen, said method comprising

(a) depositing a coating comprised of a photosensitive binder on the surface,

(b) exposing prescribed areas of the coating through the apertures of the mask to light from a first light source having an equivalent diameter of about 0.160 to 0.200 inch,

(c) exposing the prescribed areas of the coating through the apertures of the mask to light from a second light source having an equivalent diameter of about 0.080 to 0.120 inch,

(d) and then developing the exposed coating.

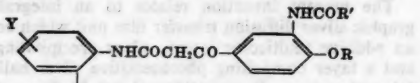
3,685,995

YELLOW-FORMING COUPLER COMPOUNDS AND COLOR PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Makoto Yoshida, Momotoshi Tsuda, Yasushi Oishi, and Kiyoshi Nakazyo, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 7, 1970, Ser. No. 26,350
Claims priority, application Japan, Apr. 7, 1969, 44/26,267
Int. Cl. G03c 1/40, 7/00
U.S. Cl. 96—100 13 Claims

Novel yellow-forming coupler compounds, represented by the formula



(I)

wherein X represents a halogen atom, a lower alkoxyl group, a dialkylamino group or an aryloxy group; Y represents a hydrogen atom, a halogen atom, a trifluoromethyl group, a cyano group, an alkyl group having less than 8 carbon atoms, an alkoxyl group, an aryloxy group, an acyl group, a carbamyl group, an acylamino group, a sulfoamino group, a sulfoamoyl group, a carboalkoxyl group, or an amino group; R represents an alkyl group having 1 to 5 carbon atoms; and —COR' represents an acyl group having 9 to 28 carbon atoms, and methods of their preparation are disclosed. Color photographic light-sensitive elements containing these compounds are also disclosed.

3,685,996

THERMOGRAPHIC COPY SHEET CONTAINING A BENZO HYDRAZONE

Albert W. Leclair, Hudson, and Charles H. Benbrook, Nashua, N.H., assignors to Nashua Corporation, Nashua, N.H.

No Dawing. Filed Apr. 2, 1970, Ser. No. 25,260
Int. Cl. G03c 1/36, 1/02
U.S. Cl. 96—101 1 Claim

The presence of a benzo hydrazone compound in a reducible silver salt-based thermo copy sheet improves the density and contrast of the image areas.

3,685,997

PHOTOGRAPHIC PROCESSES

Lillian M. Kellogg and Nancy B. Liebert, Rochester, N.Y., assignors to Eastman Kodak Co., Rochester, N.Y.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,172
Int. Cl. G03c 1/28, 5/32
U.S. Cl. 96—107 8 Claims

Silver halide grains, having certain methine sensitizing dyes adsorbed thereto, are rendered sensitive to infrared radiation longer than about 2.0 micron by cooling the grains to below about —180° C., and uniformly exposing the cooled grains to radiation having a wavelength from about 370 to about 460 nm. to produce a developable latent image. An imagewise infrared Herschel exposure of the cooled grains causes imagewise destruction of the developable latent image.

3,685,998

PROTEIN CROSS-LINKED WITH POLYMERIZED UNSATURATED CARBOXYLIC ACID

Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,480
Int. Cl. A23k 1/18; A23j 3/00
U.S. Cl. 99—2 R 6 Claims

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and a polymerized unsaturated carboxylic acid or anhydride. Exemplary of such polymers are ethylene maleic anhydride copolymer and polymaleic anhydride homopolymer.

3,685,999

STABILIZED WET BABY FOOD

Vincent J. Kelly, Fremont, Mich., and William G. Fry, Worthington, Ohio, assignors to Gerber Products Company, Fremont, Mich.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,569
Int. Cl. A23l 1/10
U.S. Cl. 99—100 3 Claims

A wet precooked baby food formulation thickened by including a non-waxy grain starch that has been at least partially modified with both bifunctional and monofunctional etherifying and/or esterifying agents. The formulation exhibits excellent cold stability characteristics during prolonged storage periods.

3,686,000

MOISTURE RESISTANT SUGAR FILAMENTS

Norman F. Lawrence, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,638
Int. Cl. A23g 3/30
U.S. Cl. 99—134 R 12 Claims

A moisture resistant material is mixed with sugar prior to formation of sugar filaments employing heat and centrifugal force. The moisture resistant additive incorporated with the heated sugar solidifies upon cooling and yields moisture resistant properties yet permits uniform and controllable sugar dissolving.

3,686,001

FLAVORED READY-TO-EAT BREAKFAST CEREAL

George Christianson, Wayzata, Minn., assignor to General Mills, Inc.

No Drawing. Filed June 27, 1969, Ser. No. 837,346
Int. Cl. A23l 1/10
U.S. Cl. 99—83 7 Claims

A flavored ready-to-eat breakfast cereal comprised of separate units of a ready-to-eat cereal and a readily soluble puffed sugar body with the sugar body impregnated with the desirable flavor components.

3,686,002

PROCESS FOR PREPARATION OF AGGREGATED FOOD PRODUCTS AND COMPOSITION THEREFOR

Sohta Nakano, 798 Komaba-cho, Meguro-ku, Tokyo, Japan; Kazumitsu Fujimoto, 118–3 Chibadera-cho, Chiba-shi, Chiba-ken, Japan; Kazuhiro Otomo, 1590–1 Hanazono-cho, Chiba-shi, Chiba-ken (% Chibaseihun Hanazonoryo), Japan; Toshiyuki Yokota, 18–14 2-chome, Kichijoji Kita-machi, Musashino-shi, Tokyo, Japan; and Hiroshi Shindo, 1672 Seya-machi, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

No Drawing. Filed Dec. 10, 1969, Ser. No. 884,036
Claims priority, application Japan, Dec. 24, 1968, 43/94,834; Nov. 18, 1969, 44/92,275
Int. Cl. A22c *18/00, 25/00*
U.S. Cl. 99—107 7 Claims

Preparation of various aggregated foods by applying to surfaces of food pieces to be bonded a mixture comprising a protein, a polysaccharide and an inorganic compound of an alkaline earth metal.

3,686,003

FLAVORING FOODS BY ADDITION OF UNSATURATED ALIPHATIC ALDEHYDES OR PRECURSORS THEREOF

David Adriaan van Dorp, Vlaardingen, Netherlands, and Philip Akroyd, Rushden, Northants, and Lothar Mindt, Bromham, Bedford, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation of application Ser. No. 304,301, Aug. 22, 1963. This application Apr. 15, 1970, Ser. No. 28,215
Claims priority, application Great Britain, Aug. 23, 1962, 32,360/62
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 13 Claims

A method of flavouring foodstuffs by incorporating therein an aliphatic aldehyde having from 11–17 carbon atoms and from 2–4 double bonds with at least one double bond non-conjugated or by incorporating precursors which form the aldehyde by oxidation, hydrolysis or thermal decomposition.

3,686,004

USE OF 1-(PROP-1'-ENYL)-3,4,5-TRIMETHOXY BENZENE TO ALTER THE FLAVOR OF FOOD

Philip De C. Kratz, Rumson, and Henry A. Bondarovich, Howell Township, Monmouth County, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed May 19, 1970, Ser. No. 38,880
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 7 Claims

Foodstuff, flavor augmenting compositions are provided containing a quantity of mono-alkenyl, trialkoxy benzene sufficient to alter the organoleptic characteristics of said composition.

3,686,005

Patent Not Issued For This Number

3,686,006

REFRACTORY CORES AND METHODS OF MAKING THE SAME

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc.

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,580
Int. Cl. B28b *7/28*
U.S. Cl. 106—38.3 19 Claims

Refractory cores which can be used in investment casting without first having been fired to an elevated temperature are made by a process characterized by the steps of: (1) molding a core from a refractory mixture including a sublimable binder, (2) subliming the binder from the core to produce a porous structure, (3) impregnating the pore structure with a hardening and strengthening agent, and (4) hardening the material used for impregnation.

3,686,007

ALUMINOUS CERAMIC COMPOSITIONS WITH TiO_2+MnO_2 FLUX

Leon Glon, Lourdes, France, assignor to Compagnie Generale d'Electro-Ceramique, Paris, France

Continuation-in-part of application Ser. No. 505,236, Oct. 26, 1965. This application Jan. 22, 1970, Ser. No. 5,104
Int. Cl. C04b *33/26*
U.S. Cl. 106—46 23 Claims

The present disclosure is directed to ceramic compositions useful, for example, for making large dimensional high tension insulators. The ceramic compositions contain a mixture of TiO_2 and MnO_2 in stated amounts to give said compositions the best overall properties of fabrication, drying, mechanical properties, electrical properties, firing range, color and price.

3,686,008

AQUEOUS HYDRAULIC CEMENT SLURRY

Hugh T. Harrison, Tulsa, and Korwin J. Goodwin, Enid, Okla., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application July 29, 1968, Ser. No. 748,173, now Patent No. 3,605,898, dated Sept. 20, 1971. Divided and this application June 15, 1970, Ser. No. 57,426
Int. Cl. C04b *13/20*
U.S. Cl. 106—92 5 Claims

An improved aqueous hydraulic cement slurry which may be retained in a pumpable fluid state for an indefinite time (and accordingly used as a well-drilling circulating fluid) by admixture therewith of a heptolactone, particularly D-gluco-D-guloheptolactone, and just prior to ultimate emplacement of the slurry containing the additive, admixing therewith a polyvalent metal salt accelerator to the setting rate, e.g. $CaCl_2$.

3,686,009

QUINACRIDONE CONTAINING PIGMENTS

William A. West, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 813,748, Apr. 4, 1969. This application Mar. 3, 1971, Ser. No. 120,765
Int. Cl. C08h *17/14*
U.S. Cl. 106—288 Q 2 Claims

As new quinacridone based pigments, solid solutions of, by weight, 5 to 67 percent of linear quinacridone, 30 to 85 percent of quinacridonequinone, and 3 to 20 percent of 6,13-dihydroquinacridone.

3,686,010

PROCESS FOR THE MANUFACTURE OF TITANIUM DIOXIDE PIGMENT HAVING HIGH SPECIFIC RESISTANCE

Monroe M. Solomka, Bilbao, and José M. Genua Montoya, Algorta, Spain, assignors to Dow-Unquinesa S.A., Axpe, Bilbao, Spain

Filed Dec. 30, 1970, Ser. No. 102,835
Int. Cl. C09c *1/36*
U.S. Cl. 106—300 10 Claims

A titanium dioxide pigment having high specific resistance is prepared by forming a slurry of the pigment having a solids content of about 10–30% by weight in deionized or distilled water, heating the slurry between about 50° C. and its boiling point, for at least 15 minutes, and dewatering and drying the pigment.

3,686,011

SATIN-WHITE FOR USE IN PAPER GLAZE, PAINTS AND THE LIKE, AND PROCESS FOR THE PRODUCTION THEREOF

Paola Casini, Terni, and Virginia Mollaretti, Milan, Italy, assignors to Bianco Satin S.r.l, Andrea Doria, Milan, Italy

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,160
Claims priority, application Italy, Dec. 10, 1969, 42,098
Int. Cl. C09c *1/02*
U.S. Cl. 106—306 7 Claims

A satin white filler prepared with a process according to which the free alkalinity of the calcium sulfoaluminate is at least partially neutralized with an organic aliphatic acid having from 12 to 20 carbon atoms.

3,686,012

STABLE SOLUTIONS OF BASIC LEAD SOAPS

Alfred Fischer, Bronx, N.Y., and Irene A. E. Fraser, Toronto, Ontario, Canada, assignors to Tenneco Chemicals, Inc.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,362
Int. Cl. C09f *9/00*
U.S. Cl. 106—310 13 Claims

Stable solutions of basic lead soaps suitable for use as paint driers are obtained by using a solvent for the soaps which comprises an ether having saturated aliphatic and/or aromatic hydrocarbon groups. The monohydroxylated polyethers are preferred.

3,686,013

TREATMENT OF INGOT MOULDS

John Edward Williams, 285 Long Acre, Nechells, Birmingham 7, England

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,094
Claims priority, application Great Britain, Mar. 19, 1970, 13,374/70
Int. Cl. B29c *1/04*
U.S. Cl. 117—5.1 3 Claims

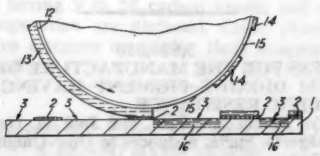
Ingot mould bases are protected by a bottom plate dressing applied by placing a heat rupturable bag of the liquid dressing on the hot base of the mould.

3,686,014

COPYING

Abram Games, 41 The Vale, London NW. 11, England

Continuation-in-part of application Ser. No. 421,886, Dec. 29, 1964. This application Feb. 24, 1966, Ser. No. 534,956
Claims priority, application Great Britain, Jan. 1, 1964, 89/64
Int. Cl. B44d *5/04;* B41m *5/00*
U.S. Cl. 117—1.7 38 Claims



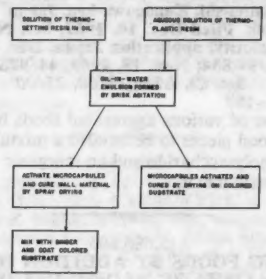
A method of coping an original comprising locating a layer of absorbable liquid and a surface in adjacency with an original having information areas having differential liquid absorption characteristics, and removing the surface which contains a liquid pattern corresponding to the original due to the differential absorption of said liquid in accordance with the information areas on the original.

3,686,015

PRESSURE SENSITIVE RECORD SYSTEM

Mabrin P. Powell, Chicago, and Mark R. Nauman, Lake Forest, Ill., assignors to U.S. Plywood-Champion Papers Inc., New York, N.Y.

Filed July 17, 1970, Ser. No. 55,924
Int. Cl. B41m *5/16;* B01j *13/02*
U.S. Cl. 117—36.7 9 Claims


SOLUTION OF THERMO-SETTING RESIN IN OIL
AQUEOUS SOLUTION OF THERMO-PLASTIC RESIN
OIL-IN-WATER EMULSION FORMED BY BRISK AGITATION
ACTIVATE MICROCAPSULES AND CURE WALL MATERIAL BY SPRAY DRYING
MICROCAPSULES ACTIVATED AND CURED BY DRYING ON COLORED SUBSTRATE
MIX WITH BINDER AND COAT COLORED SUBSTRATE

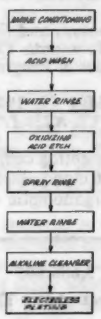
A dry, pressure-sensitive copy system is provided by coating discrete, substantially spherical air-containing microcapsular opacifying agents having controlled structural integrity onto a colored surface. Localized application of pressure to the coating causes destruction of the opacifying agents and exposes the underlying colored surface at the points of pressure application thereby producing an image.

3,686,016

CONDITIONING OF PROPYLENE POLYMERS FOR ELECTROLESS PLATING

Eileen Maguire, San Gabriel, and Leon A. Kadison, Pasadena, Calif., assignors to Crown City Plating Company, El Monte, Calif.

Filed Aug. 19, 1970, Ser. No. 65,024
Int. Cl. B44d *1/092;* C23c *3/02*
U.S. Cl. 117—47 A 13 Claims



Amines having the structure

wherein R_1 and R_2 are alkyl groups containing up to four carbon atoms, and R_3 is hydrogen or a hydrocarbon radical, are used as pre-etch conditioners to improve the adhesion of electrolessly deposited metals to the surface of propylene polymers.

3,686,017

SURFACE TREATMENT OF NYLON SHAPED ARTICLES WITH AQUEOUS REDUCING AGENTS

Virginia C. Menikheim, Chapel Hill, and Charlie C. Kilmer, Raleigh, N.C., assignors to Monsanto Co., St. Louis, Mo.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,299
Int. Cl. C23b *5/64*; C23c *3/02*
U.S. Cl. 117—47 A 6 Claims

Shaped nylon (i.e. polyamide) articles having greatly improved surface characteristics are provided by a process which involves ionization of the surface amide groups by a brief exposure to aqueous solutions of reducing acids under carefully controlled conditions, followed by washing and drying the surface. The nylon articles so produced are excellently suited for coating with metal plate or polar organic resins.

3,686,018

METHOD OF METALLIZING AN ORGANIC SUBSTRATE

Robert O. Lindblom and Harvey D. Ledbetter, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 682,582, Nov. 13, 1967. This application Nov. 2, 1970, Ser. No. 86,336
Int. Cl. C23c *13/04*
U.S. Cl. 117—47 A 11 Claims

Synthetic resinous substrates substantially free of volatile materials are activated by electric glow discharge treatment of the surface under reduced pressure in the presence of a gas. The surface is subsequently or simultaneously treated with an oxidizing agent and a ductile metal deposited from a gas to form a layer about 10 angstroms to about 10,000 angstroms in thickness. The metal layer deposited is coherent and has high barrier properties.

3,686,019

PROCESS FOR THE MANUFACTURE OF FIBROUS MIXTURES HAVING SUPERIOR ANTISTATIC CHARACTERISTICS

Toshio Ohfuka, Hideo Sato, and Yasuo Uchida, Fuji-shi, Japan, assignors to Asahi Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Oct. 23, 1969, Ser. No. 868,889
Claims priority, application Japan, Oct. 24, 1968, 43/77,036; Nov. 20, 1968, 43/84,466
Int. Cl. B44d *1/092*, *1/52*
U.S. Cl. 117—47 R 15 Claims

A process for the manufacture of a fibrous mixture having superior antistatic characteristics comprising the steps of

(1) subjecting a fibrous material to deposition of a noble metal catalyst on the surface of said fibrous material thereby sensitizing, conditioning and activating said surface,
(2) drying the catalyst-deposited fibrous material,
(3) mixing the thus catalyst-deposited and dried fibrous material with a non-catalyzed fibrous material forming a fibrous mixture,
(4) subjecting said mixture to stretching, shrinking, bulking, texturizing, weaving, knitting, oiling or dyeing, and
(5) subjecting said mixture to a metal-deposition treatment in a chemical bath containing a metal selected from the group consisting of silver, copper, nickel, tin, palladium, cobalt, zinc, chromium, and gold, thereby depositing said metal exclusively on the fibrous material in said mixture containing said deposited catalyst,

is disclosed.

3,686,020

ELECTROLESS NICKEL PLATING ON GLASS

Miguel Coll-Palagos, Rye, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 687,447, Dec. 4, 1967. This application Nov. 4, 1970, Ser. No. 86,963
Int. Cl. C23c *3/02*
U.S. Cl. 117—54 14 Claims

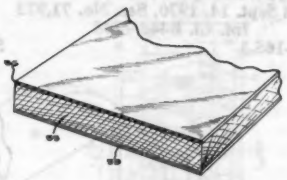
An adherent coating of electroless nickel plate on glass is obtained using an acidic electroless plating solution having a pH within the range of about 5.0 to 7, which solution contains borate ions, fluoride ions and an ion of an organic hydroxycarboxylic acid such as glycolate ion. The use of a hydrofluoric acid etch prior to plating further improves adhesion.

3,686,021

BACKING MATERIAL FOR LAMINATED PRODUCTS

Charles A. Lee, Knoxville, Tenn., assignor to Southeastern Products, Inc., Knoxville, Tenn.

Continuation-in-part of application Ser. No. 662,759, Aug. 23, 1967. This application Feb. 17, 1970, Ser. No. 12,087
The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed
Int. Cl. C03c *25/02*
U.S. Cl. 117—76 T 7 Claims



A strong, dimensionally-stable backing sheet material for use in laminated products is formed from a web of heat and moisture stable fibers impregnated with a thermosetting resin bonding the fibers one to another and partially filling the interstices therebetween. At least a portion of the fibers protrude from each side of the sheet to define uniform rough opposite surfaces, with the fibers and resin defining a void volume on each side of the sheet. The void volume on one side of the sheet serves to receive an adhesive for adhering the backing to its underlying ply in the laminated product. A second thermosetting resinous composition provided on the opposite side of the sheet at least partially fills the void volume on such side of the sheet and plugs the interstices between fibers.

3,686,022

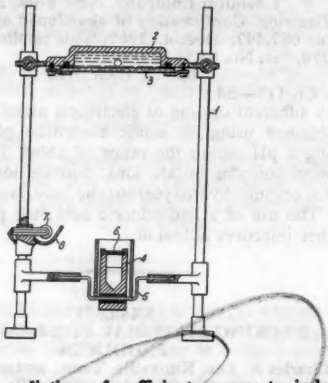
PRODUCTION OF FILMS BY VAPOR DEPOSITION AND IRRADIATION

Martin White, Brighton, England, and Peter Purnell Luff, Ottawa, Ontario, Canada, assignors to National Research Development Corporation, London, England

Filed Dec. 29, 1969, Ser. No. 888,433
Claims priority, application Great Britain, Jan. 2, 1969, 393/69
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 15 Claims

A process for the deposition of a thin polymer film on a cooled substrate which comprises heating a polymer in vacuo in the presence of the substrate so as to deposit

polymeric material thereon and simultaneously irradiating the polymeric material during the entire period of



deposition with radiation of sufficient energy to induce cross-linking in the polymer.

3,686,023

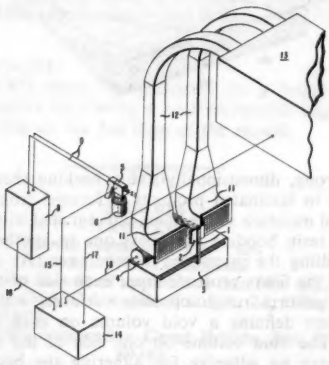
METHOD FOR PRODUCING VISUALLY REPRODUCIBLE COATINGS ON SUBSTRATES

Webster H. Edwards, Springfield, Pa., Earl A. Miller, Arlington Heights, Ill., and Thomas A. Scully, Glenolden, Roy H. Vining, Haverford, and David Wittman, Wallingford, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 14, 1970, Ser. No. 71,973

Int. Cl. B44d *1/48*

U.S. Cl. 117—105.3 **5 Claims**



An apparatus and method for reproducibly spray painting a substrate whereby the texture of a spray painted surface can be uniformly duplicated regardless of time, location or climatic conditions to produce a substrate which can be used to quality control paint color based on an instrumental comparison of the painted substrates.

3,686,024

PROCESS OF MAKING A WATER-ABSORBENT COATED ARTICLE AND RESULTANT PRODUCT

Robert J. Nankee, Jack C. Lamphere, and Rodney A. Nelson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,835

Int. Cl. B32b *27/12*; D06m *13/40*

U.S. Cl. 117—140 A **11 Claims**

Water-absorbent coated articles are prepared by contacting a fibrous material with a water-swollen gel and drying the coated material thereby obtained. Adherence of the gel is improved by pretreatment of the fibrous base with a cationic polymer such as polyethylenimine. Fabrics coated with gels such as cross-linked partially hydrolyzed polyacrylamide are useful in various applications where it is desirable to hold or absorb an aqueous fluid in a particular location.

3,686,025

TEXTILE SOFTENING AGENTS IMPREGNATED INTO ABSORBENT MATERIALS

David Russell Morton, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 30, 1968, Ser. No. 788,102

Int. Cl. D06m *13/00*; D21h *1/34*

U.S. Cl. 117—140 R **8 Claims**

Softening agents can be impregnated into absorbent materials, especially absorbent paper and non-woven cloth, and such compositions are useful and effective for softening textile fabrics in a standard, automatic, clothes dryer, as well as in an automatic washer.

3,686,026

PROCESS FOR FINISHING TEXTILE MATERIALS WHICH CONTAIN WOOL

Karl Schafer, Opladen, and Artur Reischl, Friedrich Reich, and Dieter Dieterich, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,801

Claims priority, application Germany, Mar. 29, 1969, P 19 16 331.6

Int. Cl. D06m *3/02*

U.S. Cl. 117—141 **7 Claims**

Process for finishing textile materials made of wool or containing wool consisting in treating the textile materials with aqueous liquors which contain self-dispersible isocyanate polyaddition products containing 'onium salt groups and which are free from isocyanate groups and subsequently drying the materials.

3,686,027

WELDING ELECTRODE FOR JOINING COPPER-NICKEL ALLOYS

Walter A. Petersen, Ridgewood, N.J., assignor to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Original application July 1, 1968, Ser. No. 741,286, now Patent No. 3,560,273, dated Feb. 2, 1971. Divided and this application Apr. 3, 1970, Ser. No. 29,380

Int. Cl. B35k *35/00, 35/04*

U.S. Cl. 117—205 **8 Claims**

A flux covered welding electrode for welding copper-nickel alloys, particularly those containing chromium. If chromium is absent from flux, weld cracking is likely. In addition to chromium, flux contains calcium carbonate, cryolite, titania, silicon and titanium. Use of manganese carbonate and bentonite beneficial.

3,686,028

MASKED PHOTOCATHODE

Terence W. O'Keeffe, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

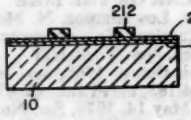
Original application Apr. 29, 1968, Ser. No. 724,839, now Patent No. 3,588,570, dated June 28, 1971. Divided and this application Sept. 24, 1970, Ser. No. 74,992

Int. Cl. H01j *39/06*

U.S. Cl. 117—212 **3 Claims**

A shadow mask particularly for use with ultraviolet sensitive photocathodes is provided of a material that does

not transmit ultraviolet radiation and which, furthermore, does not absorb other wavelength radiation, such as visible. This permits the photocathode to be immediately adjacent the mask because when exposed by a high intensity light



source appreciable heating in the mask material that would damage the photocathode does not occur. The mask may be, for example, an ultraviolet absorber, such as titanium ions in a titanium oxide.

3,686,029

Patent Not Issued For This Number

3,686,030

WIRE CONDUCTOR HAVING A RESIN COATING MODIFIED WITH AMINE-SILICONE REACTION PRODUCT

Jerome A. Preston, Fort Wayne, Ind., assignor to Essex International, Inc.

No Drawing. Filed June 29, 1970, Ser. No. 50,978
Int. Cl. B44d *1/42*
U.S. Cl. 117—232 **4 Claims**

Amine-modified siloxanes are added to wire conductor insulating coatings, i.e., solutions of nylon, polyethylene terephthalate and polytrimellitamide, to reduce the coefficient of friction of the cured coating. The coatings of the invention adhere to conventional enamels and may be used under or over such enamels. Upon heating, the ingredients in the deposited coating react or interreact to produce hard, slippery surfaces.

3,686,031

METAL PHOSPHATE COATED FERROMAGNETIC CHROMIUM OXIDE AND ITS PREPARATION

Joseph H. Balthis, Jr., Mendenhall, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 26, 1969, Ser. No. 880,299
Int. Cl. C04b *35/100*; C01g *37/02*; C23c *1/10*
U.S. Cl. 117—234 **26 Claims**

Ferromagnetic composition of improved stability comprising a ferromagnetic chromium oxide substrate coated with a metal phosphate such as aluminum phosphate. Preparation of the above composition by slurrying ferromagnetic chromium oxide particles in water and precipitating the metal phosphate by adding to the slurry at a temperature of 0° C.–100° C. and at a pH of 2.2–7.0 soluble phosphates or acids of pentavalent phosphorus and soluble trivalent aluminum, tetravalent zirconium and titanium, and divalent lead salts or metal aluminates or plumbites.

3,686,032

Patent Not Issued For This Number

3,686,033

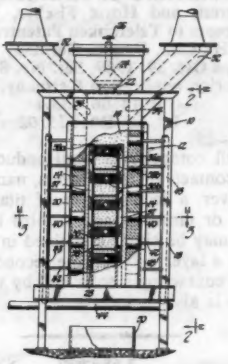
Patent Not Issued For This Number

3,686,034

GRAVITY FLOW SAND RECLAMATION PROCESS

John J. Rothschild, Bloomfield Township, Oakland County, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 14, 1970, Ser. No. 80,689
Int. Cl. B08b *7/00*
U.S. Cl. 134—2 **2 Claims**



A gravity flow, thermal reclamation process for continuously recovering used foundry sand having a carbonaceous coating thereon wherein a substantially free flowing, downwardly gravitating dispersion of sand particles is passed through a vertically disposed furnace and sequentially through a series of vertically displaced sand dispersion grates transversely mounted therein with open zones intermediate the grates whereby the free falling sand particles are continuously interchanged along the length of the furnace between vertical planes and each sand particle is exposed to radiant heat and oxygen in at least one of the open zones during its passage through the furnace to achieve rapid and substantially complete combustion of the particle coating.

3,686,035

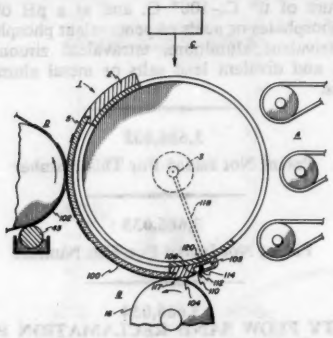
CLEANING APPARATUS

Bernard J. Riley, Jr., Ontario, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,922
Int. Cl. B08b *5/04*
U.S. Cl. 134—21 **2 Claims**

A system for the removal of accumulations of liquor and fine solid material from between two movable con-

tacting members by a vacuum chamber with a rounded entrance slot and a rubber-like wiper that seals and flicks



accumulations off the surface of the members as they move into and out of contact.

3,686,036

SOLAR CELL WITH METAL LAYERED CONTACT AND METHOD OF MANUFACTURE

Reinhard Gereth and Horst Fischer, Heilbronn, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm, Donau, Germany

Filed Oct. 29, 1969, Ser. No. 872,237
Claims priority, application Germany, Nov. 4, 1968, P 18 06 835.4
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **9 Claims**

A solar cell comprises a semiconductor body having one or both contacts of three layers, namely, a first component of silver, a second layer of titanium chromium, molybdenum or tantalum and a third layer of precious metal which may be either contained in the second layer or may form a layer between the second and first layers. A method of contacting a solar cell by vapour deposition of the layers is also included.

3,686,037

Patent Not Issued For This Number

3,686,038

HIGH ENERGY DENSITY BATTERY WITH TRIHYDROCARBYL CARBAMATE BASED ELECTROLYTE

Bruce H. Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,414
Int. Cl. H01m *11/00*
U.S. Cl. 136—100 R **9 Claims**

High energy density galvanic batteries having high utilization of active electrode material can be prepared using voltaic cells having an anode of one of the light metals of Group I–A or II–A of the Periodic Table, a cathode of iron sulfide, copper sulfide, nickel sulfide or nickel fluoride and an electrolyte comprised of trihydrocarbyl carbamate as solvent and up to about 30% by weight of a conductive salt, having the formula $MM'F_6$ where M is Li, Na or K and M' is P, As or Sb, dissolved therein. Optionally up to about 40% by weight of the solvent can be comprised of a secondary solvent, having the formula $R^3O\{CH(R^4)CH_2O\}_nR^3$ in which R^3 is a C_1 to C_3 alkyl group, R^4 is hydrogen or a methyl group and n is 0–2, to improve low temperature performance of the battery.

3,686,039

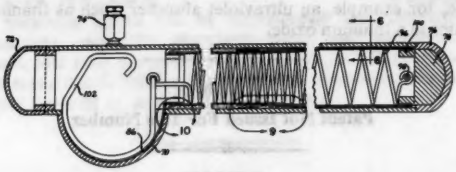
Patent Not Issued For This Number

3,686,040

HEATING SYSTEM FOR A RAILWAY TANK CAR OR THE LIKE

George M. Grover, Los Alamos, N. Mex., and Edward L. Coyle, St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Original application Oct. 4, 1968, Ser. No. 765,208, now Patent No. 3,554,183, dated Jan. 12, 1971. Divided and this application May 14, 1970, Ser. No. 48,729
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **3 Claims**



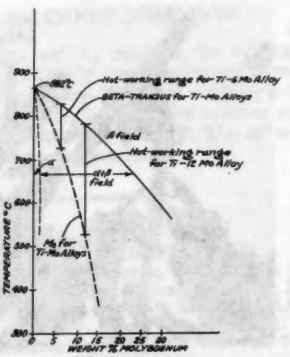
A heat transfer pipe containing a vaporizable fluid and having a porous wick on its inner surface is mounted in the tank of a railway tank car and extends into a furnace outside the tank. The outer end of the pipe communicates with a reservoir for the fluid. The wick has a plurality of porous metallic layers designed to provide good heat transfer, as well as a high degree of capillary action. Evaporation of the liquid produced by the furnace and condensation along the whole length of the pipe in the tank transfer a great amount of heat into the tank at a generally uniform temperature.

3,686,041

METHOD OF PRODUCING TITANIUM ALLOYS HAVING AN ULTRAFINE GRAIN SIZE AND PRODUCT PRODUCED THEREBY

Daeyong Lee, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of application Ser. No. 787,838, Dec. 30, 1968. This application Feb. 17, 1971, Ser. No. 116,069
Int. Cl. C22f *1/18*
U.S. Cl. 148—11.5 R **10 Claims**



A process is disclosed for producing ultrafine grained titanium alloy microstructures which involves heating

the titanium alloy body to a temperature below the alloy's beta transus temperature but above its martensitic transformation temperature, hot working the heated alloy body as its temperature decreases, quenching, and repeating the cycle at least once.

3,686,042

SEMIHARD MAGNETIC MATERIAL

Zenzo Henmi and Tatsuji Sasaki, Kawasaki-shi, Yuji Matsui, Yokohama-shi, and Harumi Maegawa, Yoshihiro Sato, Tsuneyasu Gotoh, and Masahiro Komatsu, Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of application Ser. No. 766,539, Oct. 10, 1968. This application Jan. 4, 1971, Ser. No. 103,850

Claims priority, application Japan, Oct. 13, 1967, 42/66,036

Int. Cl. C22c *19/00*; H01f *1/00*

U.S. Cl. 148—31.55 4 Claims

This invention provides a semihard magnetic material having a coercive force of 10–15 oe. (oersted) and in which the ratio between remanence and saturation magnetization (hereafter referred to as the squareness ratio) is near 1 and which can be used in a semi-permanent memory device such as an electronic exchange or an electronic computer. The invention relates to a semihard magnetic material of a new composition. The composition includes 78–95% Co, 0.2–3% Be, a small amount of deoxidizer and Fe as the last constituent. The coercive force is made 10–50 oe. by an appropriate heat treatment and working process.

3,686,043

METHOD FOR REDUCING INTERLAMINATE BONDING IN MAGNETIC CORES

William R. Broyles, Centerville, and Robert L. Search, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1971, Ser. No. 116,521

Int. Cl. C21d *1/74*; H01f *1/16*

U.S. Cl. 148—112 4 Claims

In a preferred form, a method for the manufacture of laminated magnetic cores includes the use of a heat expandable fixture for reducing the tendency of adjacent laminations to become bonded during heat treating operations. The heat expandable fixture expands into engagement with the edges of the magnetic core laminations at the elevated temperatures developed during the heat treating operations. The laminations are maintained in an upright orientation by the fixture and are deflected by the expansion forces developed between the heat expandable fixture and the laminations. This decreases the effectiveness of the heat treating atmosphere and high heat conditions in developing interlaminate bonds.

3,686,044

Patent Not Issued For This Number

3,686,045

BONDING INSULATION MATERIAL WITH HALF ESTER OF AN EPOXY RESIN AND UNSATURATED DICARBOXYLIC ACID ANHYDRIDE COMPOSITION

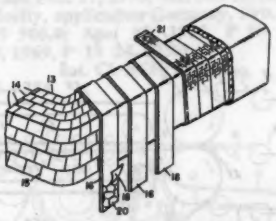
Newton C. Foster, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Oct. 27, 1967, Ser. No. 678,703, now Patent No. 3,557,246, dated Jan. 19, 1971. Divided and this application Aug. 28, 1970, Ser. No. 67,928

Int. Cl. H01b *13/06*

U.S. Cl. 156—53 7 Claims

Compositions of months-long catalyzed pot life at room temperature and hence especially suitable for coating large objects such as high voltage coils, are made by mixing (a) the product of the uncatalyzed half-esterification of epoxy resin with an olefinically unsaturated dicarboxylic acid anhydride (e.g., maleic anhydried), (b) a coreactive vinyl monomer (e.g., styrene), (c) a polycarboxylic anhydride



containing no olefinic unsaturation (e.g., NADIC methyl anhydride [NMA] viscous liquid methyl bicyclo [2.2.1] heptene-2,3-dicarboxylic anhydride isomers) and (d) polymerization catalysts and inhibitors. The large objects are impregnated with liquid low viscosity compositions. Upon heating, the composition cures to a thermoset resin.

3,686,046

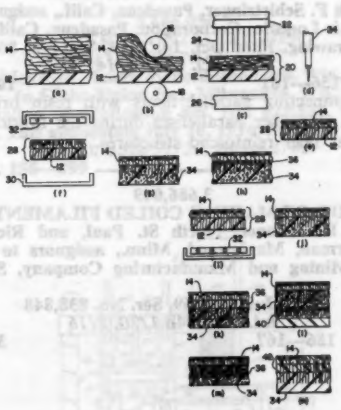
METHOD OF PRODUCING A NEEDLE PUNCHED NON-CELLULAR BACKED CARPET

Richard P. Crowley, Wellesley Hills, Mass. (125 High St., Boston, Mass. 02110)

Filed Oct. 30, 1969, Ser. No. 872,498

Int. Cl. B32b *5/19*

U.S. Cl. 156—72 12 Claims



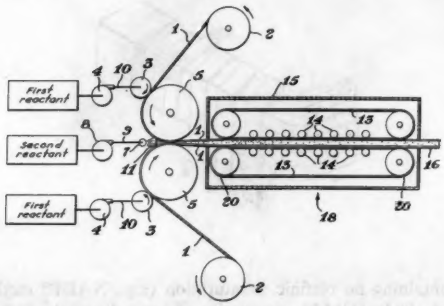
An improved needle-punched non-woven cellular backed laminate such as a carpet by garnetting overlapping layers of non-woven fibers onto a blowable thermoplastic sheet material; compressing the non-woven fibers to a desired density and thickness on the sheet material; needle punching the non-woven fibers directly into the blowable thermoplastic sheet material; and heating the needle-punched sheet laminate to form a thermoplastic cellular sheet material with a covering of needle-punched non-woven fibers secured to the cellular sheet.

3,686,047

PROCESS FOR CONTINUOUSLY PRODUCING AT HIGH SPEEDS A FOAM POLYURETHANE RESIN LAMINATE

Gordon R. Miller, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1970, Ser. No. 99,759
Int. Cl. B32b 5/20, 31/12
U.S. Cl. 156—79 18 Claims



Thermoset foams and foam laminates are prepared by applying a coating of a first reactant onto a plurality of substrates, passing the substrates through a pair of nip rolls, applying the second reactant at the interface of the plurality of substrates and adjusting the pressure between the pair of nip rolls such that a fillet of the first and second reactants is formed at the interface of the pair of substrates, passing the substrates containing the expanding mixture of reactants through a sizing device wherein expansion between the substrates is completed thereby producing a thermoset foam laminate.

3,686,048

FIBER REINFORCED PARALLEL RESINOUS STRUCTURE FABRICATION

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,363
Int. Cl. B32b 7/14
U.S. Cl. 156—161 10 Claims

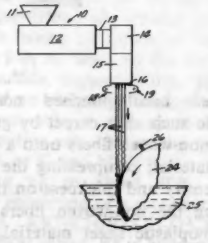
Interconnecting parallel fibers with resin bridges to maintain true fiber parallelism during the fabrication of multilayer fiber reinforced structures.

3,686,049

METHOD OF MAKING COILED FILAMENT MAT

Warren R. Manner, North St. Paul, and Richard J. Kinderman, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 3, 1969, Ser. No. 838,848
Int. Cl. D04h 1/70, 3/16
U.S. Cl. 156—167 3 Claims



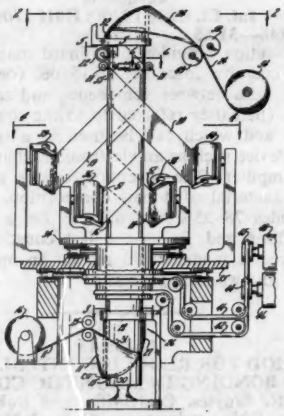
Open mats of interbonded continuous coiled filaments are produced by preheating the continuously advancing filaments, e.g. as they leave the extruder and preferably by exposure to intense infra-red radiation, and then permitting brief free fall before rigidifying the filaments and supporting the mat in a quench bath.

3,686,050

METHOD AND APPARATUS FOR MAKING SEAMLESS CROSS-BIAS REINFORCED TISSUE-FIBER LAMINATES

Anthony S. Hubin, Appleton, and Harlan W. Hirschy, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 17, 1970, Ser. No. 55,845
Int. Cl. B65h 81/02
U.S. Cl. 156—174 11 Claims



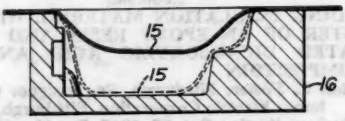
A seamless, wrinkle-free, cross-bias reinforced, porous nonwoven laminate made by shaping a web of cellulosic wadding longitudinally around a cylindrical mandrel, counter-orbiting second and third webs of thermoplastic adhesive-patterned drafted fibers around the mandrel to form opposite helices, heating the first web to laminate the webs near the edges of the first web, and severing the second and third webs along the length of the first web to produce the laminate.

3,686,051

METHOD OF MAKING LAMINATED MOTOR LAND VEHICLE BODY

Jon Michael Glen Samuel, Cobham, and James Earl Rawlings, New Malden, England, assignors to Diva Cars Limited, trading as Enfield Automotive, London, England

Filed Oct. 7, 1969, Ser. No. 864,410
Int. Cl. B29c 17/04
U.S. Cl. 156—212 3 Claims



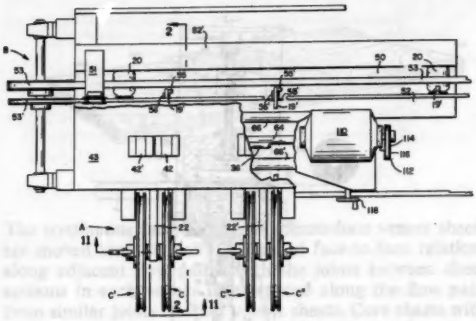
The invention provides a body chassis construction for an automobile particularly an electric automobile using plastics formed sheets providing a double wall floor.

3,686,052

PROCESS FOR APPLYING TAPE ACROSS THE COVER AND BODY OF A CONTAINER

Lloyd A. Nelson, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Original application Dec. 29, 1966, Ser. No. 606,508, now Patent No. 3,527,634. Divided and this application Sept. 17, 1969, Ser. No. 869,433
Int. Cl. B29c *17/04*
U.S. Cl. 156—212 1 Claim



A process for applying a segment of fracturable pressure-sensitive adhesive tape across the lid and body portion of a resealable container by advancing the tape transverse across a path being traversed by the container so that the lid of the container presses the tape against knife means thereby severing it as the container continues to be advanced along the path.

3,686,053

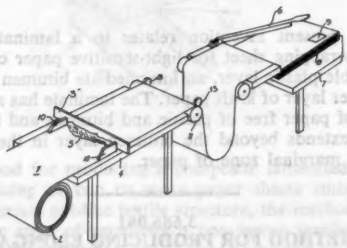
Patent Not Issued For This Number

3,686,054

PROCESS FOR PRODUCING MOLDED LAMINATED ARTICLES

Roy C. Frick, Victor E. Calvin, John C. Sharpe, and William Wallace Rowe, Lockland, Cincinnati, Ohio, assignors to Cincinnati Industries Inc., Cincinnati, Ohio

Original application Aug. 10, 1962, Ser. No. 216,204, now Patent No. 3,483,071, dated Dec. 9, 1969. Divided and this application Oct. 22, 1969, Ser. No. 871,148
Int. Cl. B29c *11/00;* B32b *3/28, 31/06*
U.S. Cl. 156—224 11 Claims



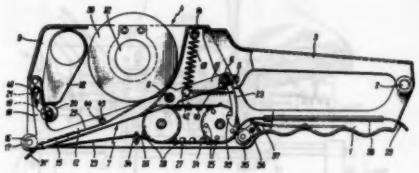
A process for producing a laminated product composed of a plurality of layers of stretchable paper bonded together by interposed layers of a resin which has a saturating consistency with respect to the paper layers either as applied or during curing, a pulverulent filler material being added to the resin in a quantity such that the cured product is characterized by the retention of a discrete layer of resin between adjacent paper layers with limited penetration of the resin into the paper layers.

3,686,055

HAND HELD LABELLING APPARATUS

Klaus Dieter Hermann, 13 Klingenstrasse, 6932 Hirschhorn, Germany

Filed Feb. 27, 1970, Ser. No. 15,182
Claims priority, application Germany, Feb. 27, 1969, P 19 09 900.4; Apr. 17, 1969, P 19 19 501.8; May 10, 1969, P 19 24 023.4
Int. Cl. B65h *5/28*
U.S. Cl. 156—384 17 Claims



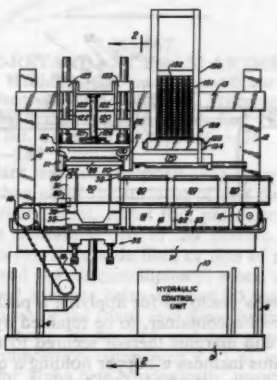
A manually operated feed device for a label web or tape is located within the casing of a hand held labelling apparatus, the feed device being arranged to withdraw the label web or tape from a label reel inserted into the casing of the apparatus and to feed it to a label delivery station, the feed devices engaging the label web or tape along the centre line thereof which in turn is arranged to lie in the centre plane of the apparatus, permitting label webs or tapes of different widths to be used, and the region of the feeding device in which engagement with the label web or tape is effected being accessible from the outside of the casing to permit easy and accurate insertion of the label web or tape.

3,686,056

BATTERY CONTAINER HEAT SEALING APPARATUS

Ronald Maynard Fiandt, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

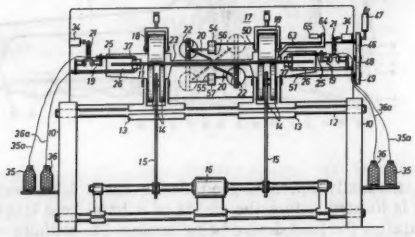
Continuation of application Ser. No. 625,550, Mar. 23, 1967. This application July 16, 1970, Ser. No. 56,235
Int. Cl. B32b *31/20;* H01m *1/02*
U.S. Cl. 156—499 3 Claims



A machine for automatically sealing thermoplastic battery cases to thermoplastic battery covers. The machine

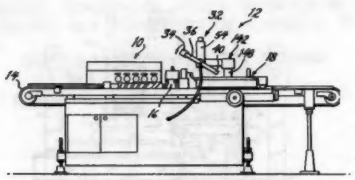
incorporates a platen which heats the appropriate portions of both the battery case and cover to a plasticized state. The case and cover are brought together to form the seal.

3,686,057
APPARATUS FOR POSITIONING SHEETS
Gerhard Ortel, Rietberg, Westphalia, Germany, assignor to Heinrich Kuper, Rietberg, Westphalia, Germany
Filed Feb. 18, 1969, Ser. No. 800,157
Claims priority, application Germany, Feb. 21, 1968, P 16 28 989.7; Austria, Aug. 20, 1968, A 8,104/68
Int. Cl. B32b *31/10, 31/06*
U.S. Cl. 156—548 **21 Claims**



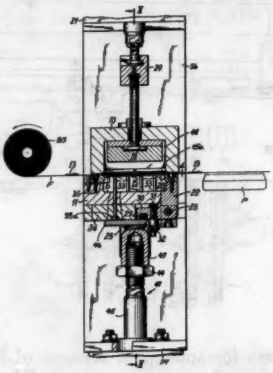
Apparatus for transversely assembling sheet strips of veneer, cardboard or the like, in which a thread is cemented at right angles to the longitudinal extension of said strips by laying a thread on both sides of each strip cementing said threads to said strips, and reversing the positions of said threads at the trailing edge of each strip so that each thread is alternately placed on the upper or lower face of adjacent strips.

3,686,058
PACKAGE INSERT APPLICATOR
Frank E. Blackett, Dublin, and Jack E. Sprouse, Pataskala, Ohio, assignors to Rohm and Haas Co., Philadelphia, Pa.
Filed May 22, 1970, Ser. No. 39,838
Int. Cl. B65c *9/08, 3/14*
U.S. Cl. 156—571 **5 Claims**



Apparatus is disclosed for applying a package insert to the exterior of a container, to be retained by a label having spaced end margins thereof secured to the container. The apparatus includes a hopper holding a quantity of inserts, and an arm, rotatable in a vertical plane, for transferring an insert from the hopper to a position between a container and a label having one end margin thereof secured to the container.

3,686,059
APPARATUS FOR THERMOFORMING PACKAGES OR HEAT-SEALING THERMOFORMED PACKAGES
Peter Auer, Laupheim, Germany, assignor to Josef Uhlmann Maschinenfabrik, Laupheim, Germany
Filed June 8, 1970, Ser. No. 44,174
Claims priority, application Germany, June 10, 1969, P 19 29 277.4
Int. Cl. B32b *31/20;* **B29c** *17/03*
U.S. Cl. 156—581 **11 Claims**



An apparatus usable for the thermoforming of packages from a synthetic-resin foil or for covering and sealing such packages.

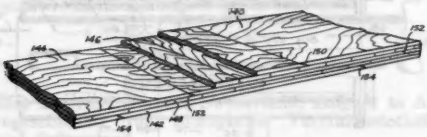
3,686,060
MULTI-LAYER WRAPPING SHEET COMPRISING A PLASTIC FILM, A BITUMEN LAYER AND A KRAFT PAPER LAYER; THE LAYERS BEING NON-COEXTENSIVE ON ONE EDGE
Edgar Gürtler, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Mar. 8, 1971, Ser. No. 121,787
Claims priority, application Germany, Mar. 9, 1970, G 70 08 555.1
Int. Cl. B32b *11/06;* **B65d** *65/16*
U.S. Cl. 161—39 **10 Claims**

The present invention relates to a laminated multilayer wrapping sheet for light-sensitive paper comprising a flexible plastic layer, an intermediate bitumen layer and an outer layer of kraft paper. The laminate has a marginal zone of paper free of plastic and bitumen and the plastic layer extends beyond the bitumen layer in the direction of the marginal zone of paper.

3,686,061
METHOD FOR PRODUCING ELONGATED PLYWOOD PANELS
Elmer T. Brown, Astoria, and Jackson H. Carroll, Portland, Oreg., assignors to West Coast Adhesives Company, Portland, Oreg.
Filed Oct. 12, 1970, Ser. No. 79,800
Int. Cl. B27d *1/06;* **B32b** *5/12, 21/14, 31/04, 31/16*
U.S. Cl. 161—56 **12 Claims**

An elongated plywood panel and a method for producing the same. Elongated continuous face, back and inter-

mediate veneer sheets are formed by joining multiple sheet sections end-to-end, such sheet sections having grain extending longitudinally of the veneer sheets formed. Contiguous ends of adjacent sheet sections in a veneer sheet are chamfered in reverse directions, and these are overlapped in the sheet. The ends are joined with thermosetting glue, which is set by applying heat and pressure thereto. The joints between sheet sections in a veneer sheet thus formed extend transversely of the veneer sheet.



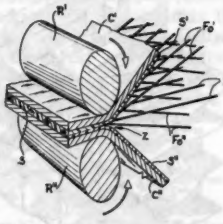
The continuous face, back and intermediate veneer sheets are moved longitudinally, in spaced face-to-face relation, along adjacent flow paths, with the joints between sheet sections in each veneer sheet spaced along the flow path from similar joints in other veneer sheets. Core sheets with thermosetting glue applied to their opposite faces are interposed between the veneer sheets. The veneer and core sheets then are heated and pressed together to set the glue. The paneling produced may then be cut to a desired length.

3,686,062

METHOD FOR PRODUCING PAPER-LIKE LAMINATED MATERIAL REINFORCED WITH NON-WOVEN FABRIC, AND REINFORCED COMPOSITE LAMINATED PRODUCT THEREFROM OBTAINED

Bruno Romanin, 8 Via Vincenzo Monti, Milan, Italy

Filed May 14, 1970, Ser. No. 37,238
Claims priority, application Italy, May 20, 1969, 17,033/69
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **13 Claims**



A method for producing a composite laminated material consisting of two or more paper sheets embodying therebetween a net-like textile structure, the method comprising the steps of providing a non-woven textile structure formed by straight parallel fitted yarns and by at least two sets of phase opposed sinusoidally arranged yarns, and of embodying the structure between the paper sheets by means of an adhesive intermediate layer.

3,686,063

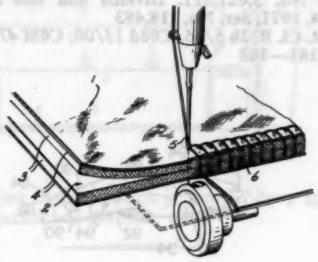
Patent Not Issued For This Number

3,686,064

WATERPROOF ARTICLE FOR USE IN SUBMARINE DIVING GARMENTS

Henri Camille Bonnet, 6 Rue Denave, 69 Tarare, France, and Jean Edmond Chabert, 10 Avenue Croze, Magnan 13, Marseille 8°, France

Filed Sept. 23, 1969, Ser. No. 860,333
Claims priority, application France, Sept. 23, 1968, 167,214
Int. Cl. B32b *7/08*
U.S. Cl. 161—89 **1 Claim**



An essentially waterproof article in sheet form for use in producing submarine diving garments comprises a flexible foam of closed cell polyvinyl chloride plasticized with a plasticizer which is insoluble in hydrocarbons, not extractable by dissolving in water and not hydrolysable. The plasticizer can be an adipate, a sebacate, a phthalate, a sulfonate, a phosphate or a polyester.

3,686,065

Patent Not Issued For This Number

3,686,066

SHAPED ARTICLES FROM NYLON-4

Edward M. Peters, Ridgefield, Conn., assignor to Radiation Research Corporation, Stamford, Conn.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,500
Int. Cl. D04h *1/06*; B32b *3/10*
U.S. Cl. 161—150 **16 Claims**

Shaped articles of nylon-4 self-bonded together in an integral structure. These articles can be obtained when nylon-4 is swollen with water and dried under pressure and a temperature below the melting point of nylon-4.

3,686,067

FIRE-RETARDANT FOAM ARTICLES

Joseph Blair Williams, Groves Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,007
Int. Cl. B32b *3/26*; C09k *3/28*
U.S. Cl. 161—160 **19 Claims**

Fire-retardant articles comprising foam with at least one but less than all of the surfaces of said foam covered with fire-retardant paint, metal foil, plasticized polyvinyl chloride film containing 10 to 20 percent by weight plasticizer, polyvinyl fluoride film, or film of pyromellitic dianhydride and 4,4'-diaminodiphenyl ether, at least one of said covered surfaces being at least 30 percent of the total surface area of the foam, said foam having a density of less than about 30 lbs./ft.^{3} and being produced by foaming a composition comprising (A) at least 40 percent by weight alpha,beta-ethylenically unsaturated carboxylic acid copolymers and/or ionomers made therefrom, (B) 1 to 50 percent by weight antimony trioxide, and (C) a complemental amount of solid halogenated

hydrocarbon, said hydrocarbon containing from 50 to 80 percent by weight halogen with the provisos that the mole ratio of antimony to halogen is from 1:½ to 1:45 and the weight of (B)+(C) is at least 10 percent of the total weight of the composition.

3,686,068

SHREDDED POLYSTYRENE FOAMS

Irby H. Leach, 2094 Emerson, Napa, Calif. 94558

Original application July 25, 1969, Ser. No. 844,896, now Patent No. 3,627,211. Divided and this application Feb. 24, 1971, Ser. No. 118,483

Int. Cl. B32b *5/16*; C08d *13/00*; C08f *47/00*

U.S. Cl. 161—168 4 Claims

Foam, such as foamed beads, are shredded into irregularly shaped particles having random and irregular exterior surfaces, tears and ragged edges to rupture and open a substantial number of the foam cells. The foam beads are passed between relatively moving, opposing shredding surfaces including tooth-like serrations. Oversize shredded particles are separated on a screen from which they are recycled for reshredding and size reduction. The apparatus also includes means for feeding the foam beads to the shredding surfaces and collecting the shredded and screened particles for removal from the apparatus.

3,686,069

COMPOSITE ARTICLES OF POLYETHYLENE TEREPHTHALATE AND POLYAMIDE AND METHODS FOR MAKING SAME

Ernel R. Winkler, Corning, N.Y. (R.D. 1, Elmira, N.Y. 14903), and Im K. Park, 1 Ashwood Court, Summit, N.J. 07901

No Drawing. Continuation-in-part of abandoned application Ser. No. 683,791, Nov. 17, 1967. This application Nov. 5, 1970, Ser. No. 87,343

Int. Cl. B32b *27/08, 27/34, 27/36*

U.S. Cl. 161—227 5 Claims

Composite articles of polyethylene terephthalate and polyamide, such as multilayered films, tubes, and the like, are provided by interposing a powdered mixture of the two polymers between the parts to be joined, and fusing the resulting composite body.

3,686,070

PRODUCTION OF FIBROUS LOGS BY CONTINUOUSLY PASSING SLURRY THROUGH A FORMING CHAMBER

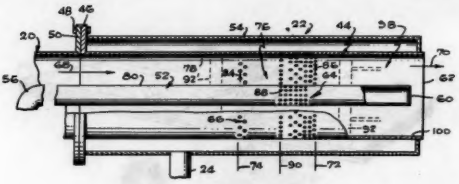
John S. Williams, Los Angeles, Calif. (19221 Beckford Place, Northridge, Calif. 91324)

Continuation of application Ser. No. 880,474, Dec. 9, 1969, which is a continuation of application Ser. No. 569,958, Aug. 3, 1966. This application May 12, 1971, Ser. No. 142,785

Int. Cl. D21j *3/04*

U.S. Cl. 162—293 8 Claims

Methods and apparatus for continuous manufacture of combustible simulated logs from paper or similar material. A slurry of water and combustible solids is continuously supplied forcibly into one end of a forming chamber provided with a plurality of radial drainage holes arranged in hole groups spaced from each other, each of the hole groups having a mean center axially spaced from each other by exponentially decreasing distances in the downstream direction whereby the solids become progressively compacted as the water drains through the holes. The compacted solids continuously exit from the forming chamber through a nonperforated region thereof for providing frictional resistance to move-



ment of the formed and compacted log whereby a coacting back pressure is maintained within the forming chamber for causing the slurry to reside within the forming chamber at the region of the drainage holes during the period of time and in the manner required for continuous drainage and compaction to occur. A cylindrical inner tube concentric with the forming chamber is disclosed for providing a log with a central longitudinal hole therethrough.

ERRATUM

For Class 165—105 see:
Patent No. 3,686,040

3,686,071

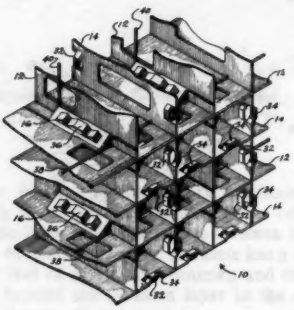
BIMETALLIC SPACER GRID

Albert L. Gaines, Simsbury, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 19, 1969, Ser. No. 851,227

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 7 Claims



A bimetallic spacer grid for fuel element support in nuclear reactors. A plurality of spacer elements formed from a first material having characteristic low neutron capture cross section are mated with spring ferrules formed of a second material having better stress relaxation properties than the first material so as not to suffer substantial decrease in resiliency due to prolonged exposure to intensive radiation. The spring ferrules are interconnected in a separate matrix so as to always be retained within the spacer grid arrangement.

3,686,072

L-ASPARAGINASE FROM ERWINIA

Denis Herbert, Flat 5, Abbey Amesbury, Amesbury, England, and Henry E. Wade, Kings Bridge Mead, Stratford-Sub-Castle, Salisbury, England

No Drawing. Filed Aug. 21, 1969, Ser. No. 856,521
Claims priority, application Great Britain, Aug. 23, 1968, 40,343/68
Int. Cl. A61k *19/00;* C12d *13/10*
U.S. Cl. 195—62 16 Claims

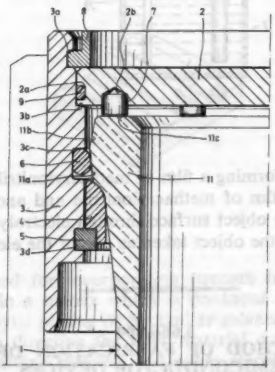
The enzyme L-asparaginase, used for leukemia therapy, may be produced in high yield and with high activity from cultures of the bacterial genus Erwinia, particularly the species *Erwinia carotovora.*

3,686,073

FERMENTOR

Achilles Baerfuss, Oberwil, Switzerland, assignor to Aktiengesellschaft für Biologische Verfahrenstechnik, Basel, Switzerland

Filed Sept. 17, 1969, Ser. No. 858,590
Claims priority, application Switzerland, May 7, 1969, 7,031/69
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 8 Claims



A fermentor comprising a glass vessel with an opening having a radially extending thickened neck portion. A hollow cylindrical sleeve surrounds the neck and a lid is seated on the neck. Sealing rings, one between the sleeve and the neck, and one between the sleeve and lid, ensure hermetic sealing of the vessel. The lid is retained by a securing ring engaging the sleeve for quick assembly of the fermentor and for withstanding high pressure in the vessel.

3,686,074

Patent Not Issued For This Number

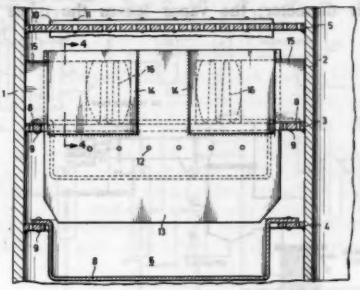
3,686,075

PARTITION WALL SEAL BETWEEN THE FEED AND DISCHARGE TUBES OF A COLUMN PLATE

Walter Spahn, % Messer Griesheim G.m.b.H., Landstr. 300, Frankfurt am Main, Germany

Filed May 19, 1970, Ser. No. 38,723
Claims priority, application Germany, June 3, 1969, P 19 28 179.9
Int. Cl. B01d *3/14*
U.S. Cl. 202—158 6 Claims

A seal for the partition wall between the liquid feed and the discharge tube in columns with circular flow at the contact places of the wall with the column jacket and inner tube is characterized by at least one guide piece fastened to the partition wall with a sealing tongue slidably supported therein, which is pressed by a spring to the column jacket and the inner tube.

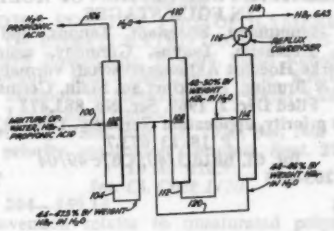


3,686,076

SEPARATION OF DRY HBr FROM A DILUTE AQUEOUS SOLUTION OF HBr

Barrett L. Cupples, Plum Borough, Clarence R. Murphy, Allison Park, and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 18, 1969, Ser. No. 886,080
Int. Cl. B01d *3/00*
U.S. Cl. 203—12 5 Claims



HBr is separated in substantially dry form from an aqueous solution containing less than 50 weight percent HBr by a double sequential distillation technique. The first distillation zone is operated at subatmospheric pressure while the second distillation zone is operated at superatmospheric pressure. The bottoms from the first distillation zone enriched in HBr serves as the charge to the second distillation zone. If a water soluble organic acid is also present, it can be initially removed with water in a distillation tower operated at a pressure of atmospheric or above.

3,686,077

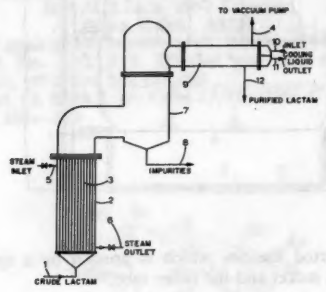
PROCESS AND APPARATUS FOR SEPARATING LIQUIDS

Hendrik de Koning, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Apr. 1, 1970, Ser. No. 24,792
Claims priority, application Netherlands, Apr. 5, 1969, 6905359
Int. Cl. B01d *3/04*
U.S. Cl. 203—40 4 Claims

A process for the separation of lower boiling point liquids from those of a high boiling point, and apparatus

therefor is disclosed. The liquid mixture is supplied to the base of the extractor and passed upwards under controlled temperature and reduced pressure in the vapor state through several tubes, whose length is from 15 to 35 times their diameter; the vapor leaves the tubes at a

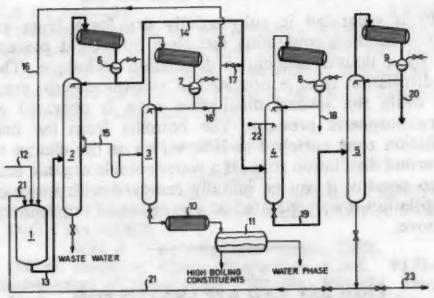


velocity approaching the velocity of sound in the vapor, and is subsequently condensed. The lower boiling liquid thus recovered is of high purity, often representing up to 90% of the total lower boiling fraction of the mixture entering the evaporator.

3,686,078
DISTILLATIVE PURIFICATION OF ACETONE IN FOUR STAGES

Gerhard Hauptmann, Stierstadt, Taunus, and Erhard Weber, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Dec. 2, 1969, Ser. No. 881,472
Claims priority, application Germany, Dec. 10, 1968, P 18 13 673.7
Int. Cl. B01d *3/40*; C07c *49/04*
U.S. Cl. 203—75 **7 Claims**

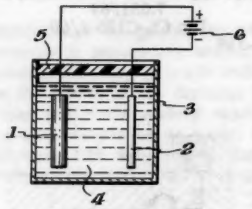


Process for the distillative purification of crude acetone produced by oxidation of propylene in the presence of catalysts containing a noble metal and a varivalent heavy metal halide in a system of 4 distilling zones wherein aqueous acetone is distilled off in the first zone, which acetone is subjected in the second zone to an extractive distillation, pure acetone is obtained from the sump of the third zone while in the fourth zone the acetone contained in the side stream of by-products of the first zone is separated.

3,686,079
METHOD OF FORMING A FILM BY ELECTROLYTIC POLYMERIZATION

Kunihiko Masunaga and Hiroshi Shinohara, Toyota-shi, Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Aug. 9, 1971, Ser. No. 170,212
Claims priority, application Japan, Aug. 17, 1970, 45/71,603
Int. Cl. C23b *5/00, 9/00*; B01k *5/00*
U.S. Cl. 204—14 N **6 Claims**

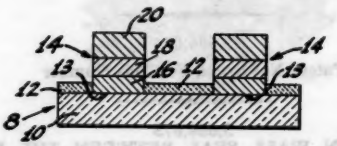


Method of forming a film of methacrylonitrile alone or a copolymer film of methacrylonitrile and another vinyl polymer on an object surface through electrolytic polymerization with the object taken as one of the electrodes.

3,686,080
METHOD OF FABRICATION OF SEMICONDUCTOR DEVICES

Joseph Henry Banfield, Plainfield, Saleem Ynes Husni, Mendham, and William John Greig, Somerville, N.J., assignors to RCA Corporation

Continuation-in-part of application Ser. No. 786,218, Dec. 23, 1968. This application July 21, 1971, Ser. No. 164,950
Int. Cl. C23b *5/48*; B44d *1/18*; B22b *31/14*
U.S. Cl. 204—15 **6 Claims**



In the fabrication of certain types of semiconductor devices, a semiconductor substrate is provided with successive layers of a first layer of titanium, a second layer of a member of the platinum group of metals, and a third layer of titanium, the layers preferably being provided in a protective atmosphere. Portions of the uppermost layer of titanium are selectively etched to expose portions

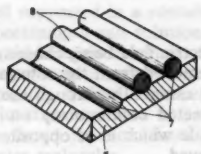
of the second layer. The exposed portions of the second layer are then immediately etched away, the remaining portions of the uppermost titanium layer serving as an etch mask in the process. The portions of the bottom layer of titanium exposed by the etching of the second layer are coated with an electrically non-conductive coating, other portions of the second layer are exposed by removal of the overcoating of titanium therefrom, and gold is immediately thereafter plated onto the newly exposed second layer portions.

3,686,081

METHOD FOR INCORPORATING STRENGTH INCREASING FILLER MATERIALS IN A MATRIX

Karl Butter, Munich, Willibald Wittich, Ottobrunn, and Armin Theiss, Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Germany

Filed Jan. 19, 1970, Ser. No. 3,942
Claims priority, application Germany, Jan. 31, 1969, P 19 04 715.5
Int. Cl. C23b *7/00, 7/02;* B65h *81/00*
U.S. Cl. 204—16 **19 Claims**



A method for incorporating strength increasing filler materials in a matrix which is produced at least partly by electrolytic plating or by similar galvanoplastic means comprising directing the filler material over the surface of the receiving material and either starting or continuing the electrolytic process to deposit a further amount of material over the filler and to bond it to the receiving material. An internal combustion engine such as a rocket thrust engine is advantageously formed with a wall having longitudinally extending cooling channels and these channels are closed at the top by a deposit of electro-plated material. The entire walls are then reinforced by encircling the deposited material with one or more reinforcing bands and by adding a further deposit of electro-plated material to enclose the filler material and to bond it within the covering wall. In some instances it is desirable to recess or groove the receiving surface for the filler material so that the filler material may fit into grooves to facilitate the electro-plating and the bonding of the filler in position.

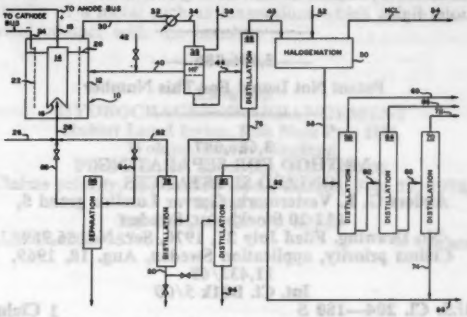
3,686,082

PROCESS FOR RECOVERY AND SEPARATION OF PERHALOGENATED FLUOROCARBONS

Forrest N. Ruehlen, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 27, 1970, Ser. No. 15,118
Int. Cl. B01j *1/10;* B01k *3/00;* C07c *17/00*
U.S. Cl. 204—59 **9 Claims**

Perhalogenated fluorocarbons, e.g., chlorofluorocarbons, contained in a mixture together with partially halogenated fluorohydrocarbons, e.g., chlorofluorohydrocarbons, are recovered and separated by halogenating, e.g., chlorinating, said partially halogenated fluorohydrocarbons to perhalogenated fluorocarbons so as to reduce the number of compounds present. The resultant mixture is



then fractionated to separate the perhalogenated fluorocarbons.

3,686,083

METHOD FOR ELECTRODEPOSITING MANGANESE

San-Cheng Lai, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.

No Drawing. Filed Nov. 25, 1970, Ser. No. 92,919
Int. Cl. B01k *3/06;* C22d *1/00*
U.S. Cl. 204—105 M **5 Claims**

An improved method of electrodepositing manganese metal using as a cathode an alloy of stainless steel and selenium.

3,686,084

INITIATORS FOR THE PHOTOPOLYMERISATION OF UNSATURATED COMPOUNDS

Hans-Jürgen Rosenkranz, Krefeld, Hans Rudolph, Krefeld-Bockum, and Hans-Georg Heine, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,104
Claims priority, application Germany, Sept. 27, 1969, P 19 49 010.9
Int. Cl. C08f *1/20*
U.S. Cl. 204—159.15 **8 Claims**

The invention relates to unsaturated polymerisable compounds and mixtures of such compounds admixed with benzophenones each of the two nuclei of which being substituted by a halogenated methyl group. If said compositions are irradiated by ultraviolet light, the benzophenone derivatives split off free radicals which initiate the polymerisation of the unsaturated compounds.

3,686,085

POLYMERIZATION OF TETRAOXANE IN THE PRESENCE OF AN IODINE OR BROMINE INITIATOR

Akihiko Ito, Yoshiaki Nakase, Masaru Yoshida, Masahiro Sakamoto, and Isao Kaetsu, Takasaki-shi, Tadashi Iwai, Miura-gun, Koichiro Hayashi, Sapporo-shi, and Seizo Okamura, Kyoto, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed July 28, 1970, Ser. No. 59,026
Claims priority, application Japan, July 29, 1969, 44/59,880; Sept. 6, 1969, 44/70,675; Oct. 9, 1969, 44/80,869; Dec. 22, 1969, 44/103,271; Jan. 16, 1970, 45/4,289
Int. Cl. C08d *1/00;* C08f *1/16, 3/40*
U.S. Cl. 204—159.21 **20 Claims**

Iodine or bromine is advantageously employed as an initiator in the polymerization of tetraoxane. The polymerization yield is increased when a halogenohydrocarbon is used as an initiator in addition to iodine or bromine.

An oxymethylene polymer having excellent heat-stability is obtained by adding an acetal or acetals to the polymerization system. Also, the polymerization is further promoted by means of an ionizing radiation or an ultraviolet light.

3,686,086

Patent Not Issued For This Number

3,686,087

METHOD FOR SEPARATING IONIZED SUBSTANCES

Anders G. E. Vestermark, Garvar Lundins grand 5, 112 20 Stockholm, Sweden

No Drawing. Filed July 21, 1970, Ser. No. 56,969
Claims priority, application Sweden, Aug. 18, 1969, 11,433/69
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 S **1 Claim**

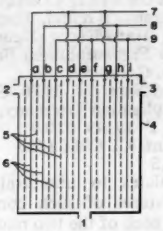
A spacer for facilitating the detection or separation of the consecutive zones of a sample formed in an electrophoretic separation process is provided. The spacer consists of a mixture of a great number of substances, the ions of which have different mobilities, the mobility difference between consecutive ions being small and substantially equal.

3,686,088

METHOD FOR IONOPHORESIS OF A DILUTE ELECTROLYTE SOLUTION

Kenjiro Kashii, 5–14–5 Saginomiya, Nakano-ku, Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,327
Claims priority, application Japan, Nov. 20, 1969, 44/92,524
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R **3 Claims**



There has been discovered a novel method for ionophoresis, that is, ionic cataphoresis of a dilute electrolyte solution characterized by using a specific multiphase alternating current instead of usually applied direct current. A dilute electrolyte solution, which does not evolve any appreciable amount of gas upon electrolysis, can be treated by this method, and purification of water or concentration of electrolyte in water may be carried out continuously and easily by this treatment.

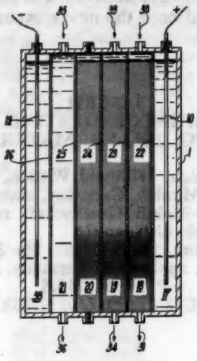
3,686,089

METHOD OF SEPARATION OF IONS FROM A SOLUTION

Emmanuel Korngold, 8 Rue Sokolov, Shikun. A., Beersheba, Israel, and Eric Selegny, 49 Rue A. Bouquet, 76 Rouen, France

Filed July 23, 1968, Ser. No. 746,984
Claims priority, application France, July 25, 1967, 115,620; May 6, 1968, 150,621
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 P **6 Claims**

A method of separation of ions from a solution, characterized in that the solution to be treated is passed through a bed of at least one type of resin in which is produced an electric field substantially at right angles to the direction of propagation of said solution, the geometry of the resin bed, the composition of the bed, the conductivity of the solution and the potential difference which exists between



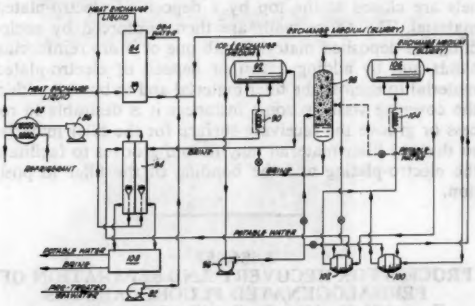
the poles of the electric field being chosen so that the ions which are to be removed from the solution transport the current by passing essentially through the resin, and that said ions are collected continuously on the side corresponding to the pole which is of opposite sign to that of the ions to be removed.

3,686,090

METHOD AND APPARATUS FOR RECOVERING WATER FROM A HYDROCARBON SLURRY

Dwight B. Pfenning, Oklahoma City, and Robert L. Brown, Norman, Okla., assignors to E-C Corporation, Dallas, Tex.

Filed Sept. 17, 1970, Ser. No. 72,946
Int. Cl. B01d *9/04*; B03c *5/00*; C02b *1/12*
U.S. Cl. 204—186 **14 Claims**



Water is separated from an intimate mixture of the water with an organic slurry which includes organic liquid and solid organic particles by subjecting the mixture to a high potential electrical field developed between electrodes within a separation tank. The mixture of water and slurry is introduced to the lower portion of the tank preferably slightly above the level of the water layer within

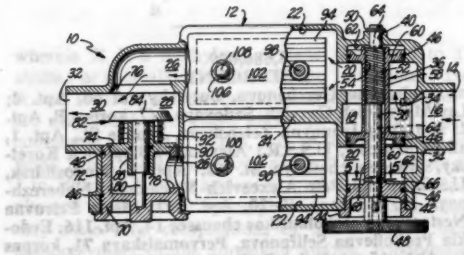
the tank, and is directed parallel to the interface between the water layer and the overlying layer of organic slurry. The mixture is directed upward through widely spaced electrode grids provided in the upper portion of the tank. The separation process is especially well adapted for use in a method for separating relatively pure water from aqueous solutions which involves the phenomena of exchange crystallization, in which ice crystals are first frozen from a saline aqueous solution, and later are melted by applying pressure to a mixture of the ice crystals with an organic liquid having properties such that the organic liquid undergoes partial freezing upon the application of sufficient pressure to melt the ice crystals.

3,686,091
ELECTROCHEMICAL CELL
Kenneth B. Sawa, Buena Park, and Radhakrishna Murty Neti, Brea, Calif., assignors to Beckman Instruments, Inc.
No Drawing. Filed Oct. 2, 1970, Ser. No. 77,740
Int. Cl. G01n *27/30, 27/40*
U.S. Cl. 204—195 F **44 Claims**

The disclosure relates to an improvement in an electrochemical cell for use in ion potential measurements of solutions. The cell contains a sensing electrode, a reference electrode, and an external electrolyte comprising the solution to be tested. At least one electrode comprises an internal half cell supported in a container of nonconductive material containing a salt solution, an internal electrolyte and a liquid junction structure of an ion permeable material. The improvement comprises a surfactant added to the cell so that the contact angle between the solution and the liquid junction structure is less than about 90°. As a result the liquid junction structure is made more permeable to water molecules.

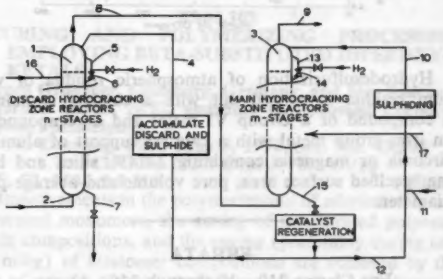
An improved electrochemical electrode for use in ion potential measurements of solutions is also disclosed.

3,686,092
WATER TREATMENT APPARATUS
Theodore A. Stehlin, Pasadena, Calif., assignor to Helen B. Hoffman, Laguna Beach, Calif.
Filed May 6, 1971, Ser. No. 140,874
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **10 Claims**



A water treatment apparatus for so-called self-energizing electrolytic water treatment can be constructed utilizing an iron housing having an inlet leading to an inlet valve chamber which is in communication with two separate treatment chambers, both of which are connected to an outlet through an outlet valve chamber. In the disclosed structure a spool valve is provided in the inlet valve chamber for directing fluid flow through one or the other of the treatment chambers while in the outlet valve chamber a double-acting check valve is provided which closes off the fluid treatment chamber through which there is no flow. The treatment chamber contains replaceable anodes of a metal such as magnesium which are in electrical contact with the housing.

3,686,093
HYDROCRACKING ARRANGEMENT
Robert Leard Irvine, Rob Ness Pyle Hill, Woking, Surrey, England
Filed Feb. 25, 1971, Ser. No. 118,698
Claims priority, application Great Britain, Feb. 27, 1970, 9,598/70
Int. Cl. C10g *23/00, 37/00*
U.S. Cl. 208—57 **4 Claims**



The invention relates to a hydrocracking arrangement. Crude or residua feedstock is in a first stage treated to hydrogenate its non-hydrocarbon content using a fluidised catalyst descending in a multi-bed reactor in countercurrent to feed and hydrogen. The effluent from the first reactor passes to a discard hydrocracker also with descending fluidised catalyst and ascending feed and hydrogen, the catalyst being regenerated low activity catalyst from the subsequent main hydrocracking zone.

3,686,094
PROCESS FOR OXIDIZING MERCAPTANS TO DISULFIDES IN THE PRESENCE OF SOLID CATALYTIC MASSES
René Laleuf and Jacqueline Nechtschein, Grenoble, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, Hauts de Seine, France
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,972
Claims priority, application France, Dec. 31, 1968, 183,002
Int. Cl. C10g *27/04*
U.S. Cl. 208—206 **9 Claims**

A process for converting sulfur compounds in petroleum cuts to disulfides comprises contacting the petroleum cut with molecular oxygen and with a solid catalytic mass insoluble in the liquid petroleum cut and consisting essentially of at least one solid phthalocyanine of a transition metal, a solid carrier and a solid alkali metal oxide or hydroxide, the amount of the transition metal phthalocyanine being between 0.05% and 50% by weight with respect to the carrier weight and the amount of the alkaline metal oxide or hydroxide being between 10% and 50% by weight with respect to the total weight of the catalytic mass. By the process, the heretofore conventional pretreatment step of mixing the petroleum cut with an alkaline aqueous phase is no longer necessary.

3,686,095

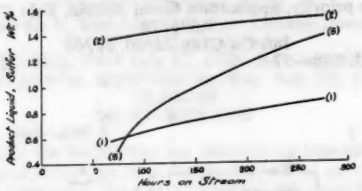
DESULFURIZATION OF RESIDUE-CONTAINING HYDROCARBON OILS

William R. Coons, Jr., Groves, and Gerald V. Nelson, Nederland, Tex., and Glenn C. Wray, Dyersburg, Tenn., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 689,825, Dec. 12, 1967. This application Feb. 16, 1970, Ser. No. 11,915

Int. Cl. C10g *23/02*

U.S. Cl. 208—216 9 Claims



Hydrodesulfurization of atmospheric residua or vacuum residua is carried out with a catalyst containing a compound of a Group VI metal and a compound of an iron group metal with a catalyst support of alumina, zirconia or magnesia containing 2–14% silica and having specified surface area, pore volume and average pore diameter.

ERRATA

For Classes 210—19 through 210—31 see: Patents Nos. 3,686,115 through 3,686,118

3,686,096

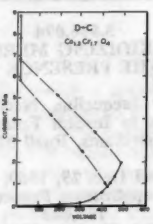
POLARONIC SEMICONDUCTOR DEVICES

Aharon Zeev Hed, Columbus, and Paul J. Freud, Worthington, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Aug. 27, 1969, Ser. No. 853,472

Int. Cl. H01b *1/06;* H01l *3/00*

U.S. Cl. 252—519 3 Claims



Devices wherein high electric fields are applied to low conductivity crystalline materials where the major mode of conduction is by hopping of localized small polarons. Mobility increases with field up to a threshold field where delocalization of the small polaron occurs, mobility increases discontinuously by a few orders of magnitude, and the conduction mode is in a polaronic band. Typical materials include spinel $Co_{1+x}Cr_{2-x}O_4$, $Co_{1-x}Li_xO$, and

$$Ni_{1+x}Mn_{2-x}O_4$$

and other oxides, sulphides, selenides, and tellurides of chromium, manganese, iron, cobalt, nickel, copper, other transition metals, and elements 22–29, 39–42, 57–75, and 89–92. I–V characteristics have been determined by D-C and A-C at 60 Hz. and by repetitive pulsing at low repetition rates. Thick specimens were used (.01 to .10 mm.) to assure the bulk nature of the transition. The instability consists of a transition from a non-ohmic low conductivity state at low fields to a high conductivity state when a breakdown field is attained. The high conductivity is sustained until the field is lowered below a minimum field at which the low conductivity state is restored.

3,686,097

PERFUME COMPOSITIONS OF PARA-MENTH-3-EN-2-ONE, 4-CARANONE AND IRRADIATION PRODUCTS OF 4-CARANONE

Paul J. Kropp, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application May 29, 1967, Ser. No. 642,235, now Patent No. 3,560,571, dated Feb. 2, 1971. Divided and this application May 1, 1970, Ser. No. 33,978

Int. Cl. A61k *7/00*

U.S. Cl. 252—522 3 Claims

Novel perfume compositions containing 4-caranone, 2 - (2' - methyl - 2' - but - 3' - enyl) - 4 - methylcyclobutanone, 2,2,5 - trimethyl - 3 - vinylcyclopentanone, para-menth-3-en-2-one and mixtures thereof.

3,686,098

NOVEL DETERGENT COMPOSITION

Ira Weil, New York, N.Y., assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 564,556, July 12, 1966. This application Oct. 30, 1969, Ser. No. 872,731

Int. Cl. C11d *1/12, 3/04*

U.S. Cl. 252—550 2 Claims

A phosphate-free detergent composition is described. The composition is built with a water-soluble salt of calcium, magnesium, strontium, barium or aluminum and is based on a dianionic detergent compound of the general formula

$$\left(\begin{matrix}Y\\|\\B_m\end{matrix}\right)^{-}\left(\begin{matrix}X\\|\\B_n\end{matrix}\right)_p^{-A}$$

where Y is an unsubstituted, mono-methyl or monohydroxy snubstituted straight-chain hydrocarbon group containing from 15 to 20 carbon atoms, X is a linking group, A and B are sulfate, sulfonate or phosphonate groups, $m+n=1$ and $p=0$ or 1.

3,686,099

DETERGENT

Nina Andreevna Gerchenova, Butyrsky val 60, Apt. 4; Lev Moiseevich Gurvich, Sadovaya 1/7, korpus B, Apt. 2; and Olga Ivanovna Zelenskaya, Frunze St., Apt. 1, all of Moscow, U.S.S.R.; Alexandr Filippovich Koretsky, Akademicheskaya St. 52, Apt. 1, Novosibirsk, U.S.S.R.; and Petr Alexeevich Machulsky, Naberezhnaya M. Gorkogo 40/20, Apt. 202; Maria Petrovna Nesterova, Volokolamskoe chaussee 14, Apt. 116; Evdokia Prokofievna Selifanova, Pervomaiskaya 71, korpus 1, Apt. 45; Arkady Borisovich Taubman, Leninsky prospect 78, Apt. 68; and Ekaterina Vasilievna Furaeva, B. Dorogomilovskaya St. 27a, Apt. 10, all of Moscow, U.S.S.R.

No Drawing. Filed Feb. 26, 1968, Ser. No. 707,963

Int. Cl. C11d *1/12*

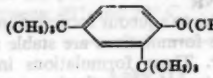
U.S. Cl. 252—554 1 Claim

Method for cleaning cargo tanks of sea tankers from the remains of oil products, fats and the like consisting essentially of 65–75 wt. percent of an alkylsulfonate having the general formula

$$C_nH_{2n+1}SO_3Na$$

wherein n=12–18, 20–30 wt. percent of an alkylbenzenesulfonate having the general formula

wherein n=10–14, and 3–7, wt. percent of a polyethylene glycol ether of di-tert-butylphenol having the general formula



wherein n=6–7. The detergent is preferably used as a 0.05–0.2% solution in sea water at a temperature of 60–80° C.

ERRATA

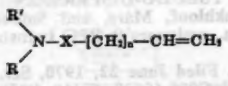
For Classes 252—8 through 252—511 see: Patents Nos. 3,686,119 through 3,686,139

3,686,100
ANION-EXCHANGE RESINS AND PROCESS FOR PREPARATION THEREOF

Paolo Parrini, Novara, Lino Credali, Bologna, and Antonio Chiolle, Ferrara, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, and Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Jan. 27, 1970, Ser. No. 10,111
Claims priority, application Italy, Jan. 30, 1969, 12,185/69
Int. Cl. C08f *3/84, 15/02, 29/12*
U.S. Cl. 260—2.1 E **10 Claims**

Anion-exchange compositions composed of polymers of unsaturated tertiary amines having the formula:



wherein X is a methylene, arylene (having 6 to 10 C atoms) or cycloalkylene (having 3 to 10 C atoms) group; R and R′ are the same or different from each other and are alkyl, aryl, cycloalkyl, alkylaryl, or arylalkyl groups containing 3 to 10 C atoms, n is an integer from 1 to 10 when X is a methylene group and is 0 or an integer from 1 to 10 when X is an arylene or cycloalkylene group; the nitrogen atoms of the amine polymer being in the quaternary state. The compositions of the invention include homopolymers of the foregoing amines, copolymers of the foregoing amines with olefins having the formula:

$$R''—CH=CH_2$$

wherein R″ is hydrogen, alkyl, aryl, cycloalkyl, alkylaryl or arylalkyl containing 1 to 10 C atoms and blends of the foregoing amine homopolymers and copolymers with each other and with non-ion exchange polymers composed of alpha-olefins. Methods for the preparation of the foregoing anion-exchange compositions in the form of granules, films and membrane are disclosed.

3,686,101
POLYURETHANE FOAMS OF ORGANIC POLYISOCYANATES AND POLYOLS DERIVED FROM ALKYLENE DIAMINES AND NOVOLAC RESINS AND METHOD OF MAKING SAME

Billy D. Davis and Elvis E. Jones, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 707,935, Feb. 26, 1968, which is a continuation-in-part of application Ser. No. 463,954, June 14, 1965. This application Feb. 24, 1970, Ser. No. 13,865
Int. Cl. C08g *22/44;* **C08j** *1/18*
U.S. Cl. 260—2.5 AQ **12 Claims**

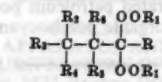
The invention concerns polyurethane foam prepared from organic polyisocyanates and a mixture of polyether polyols derived from (a) alkylene diamines and alkylene oxides and (b) novolac resins and alkylene oxides, and pertains to a method of making the polyurethane foams.

3,686,102
CURING AND POLYMERIZING PROCESSES EMPLOYING BETA-SUBSTITUTED DIPEROXYKETALS

Jurgen Groepper, Gunzburg, Germany, and Jose Sanchez, Grand Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed June 3, 1970, Ser. No. 43,208
Int. Cl. C08d *1/22;* **C08f** *37/00, 47/10*
U.S. Cl. 260—2.5 HA **1 Claim**

Improvements in the polymerization of ethylenically unsaturated monomers, the curing of unsaturated polyester resin compositions, and the curing (preferably curing and foaming) of elastomer compositions are achieved by the use of certain β-substituted diperoxyketals of the formula



such as 2,2-di(t-butylperoxy)-4-methylpentane and 4,4-di(t-butylperoxy)heptane.

3,686,103
PROCESS OF MAKING EPOXY CELLULAR PLASTICS USING BORON TRIFLUORIDE COMPLEXES

Siegfried Gowecke, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of application Ser. No. 7,414, Feb. 6, 1970, which is a continuation-in-part of application Ser. No. 605,205, Dec. 28, 1966. This application Oct. 7, 1970, Ser. No. 78,922
Claims priority, application Germany, Jan. 5, 1966, F 48,093
Int. Cl. C08j *1/26*
U.S. Cl. 260—2.5 EP **10 Claims**

Epoxy cellular plastics are obtained by foaming epoxy resins without external heating in the presence of low-boiling organic solvents as blowing agents and complex compounds of boron trifluoride and aromatic amines as polymerization catalysts. The boron trifluoride complexing agents used are selected from 2-chloraniline, 3-chloraniline, 4-chloraniline, 2,4-dichloraniline, 2-chloro-4-methylaniline, 2-bromaniline, 2 - nitro - aniline, 3 - nitroaniline, 4-nitro-aniline, 4-aminobenzoic acid ethyl ester, 2-methoxy-4-chloraniline, 4-chloro-diphenylamine, 2,2′-dichloro-benzidine, 4-chloro-1-naphthylamine, 1-chloro-2-naphthylamine and 4-methoxy-1-naphthylamine. Low temperature cures are achieved which produce cellular plastics having improved properties.

3,686,104

Patent Not Issued For This Number

3,686,105

PROCESS FOR PREPARING AMINO ALDEHYDE MOLDING COMPOSITIONS

Edwin M. Culkowski, Toledo, Donald B. Gore, Swanton, and Andrew W. Kassay, Toledo, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,892
Int. Cl. C08g *51/18*
U.S. Cl. 260—17.3 21 Claims

Amino aldehyde molding compositions are prepared by impregnating a filler with the liquid amino aldehyde resin and pigments; the resultant pigmented resin is dried and cut into popcorn which is fed to a continuous mill along with lubricants, catalysts and stabilizers to prepare the molding composition which is compacted and granulated. This process eliminates the requirement of batch ball milling, improves the economy of preparing molding composition of amino aldehyde resins and improves the gassing characteristics of the compositions during molding.

3,686,106

ROOM TEMPERATURE CURING FOUNDRY BINDER

Richard B. Tideswell, Buffalo, and Jonathan A. Stone, Williamsville, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Mar. 25, 1970, Ser. No. 22,666
Int. Cl. C08j *5/20*
U.S. Cl. 260—19 A 7 Claims

A room temperature curing foundry binder is provided comprising (A) a resinous component comprising a mixture of (1) an oil modified hydroxyalkylated novolac resin, (2) an unsaturated petroleum polymer and (3) a solvent, and (B) an organic polyisocyanate.

3,686,107

PRESSURE-SENSITIVE HOT-MELT ADHESIVES

Thomas E. Russell, Verona, N.J., assignor to The Flintkote Company, White Plains, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 739,640, June 25, 1968. This application Mar. 24, 1971, Ser. No. 127,794
Int. Cl. C09j *3/26*
U.S. Cl. 260—27 BB 10 Claims

A pressure-sensitive adhesive composition having instant room temperature tack, good cold flow resistance and good shear strength which comprises as a first component a resinous atactic polypropylene, as a second component a resinous rubbery block copolymer of styrene and butadiene or isoprene, and as a third component a modified or unmodified rosin, a coumarone-indene resin, a polyterpene resin, a diene-olefin aliphatic hydrocarbon resin or a polystyrene resin.

3,686,108

LIGHT FAST QUATERNIZED OR AMINE SALT POLYURETHANES FROM 2-ALKYL-2-DIALKYLAMINOMETHYL-1,3-PROPANE DIOLS

Helmut Reiff, Cologne-Flittard, and Dieter Dieterich, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,252
Claims priority, application Germany, Apr. 22, 1970, P 20 19 324.2
Int. Cl. C08g *22/02, 22/08, 22/10*
U.S. Cl. 260—29.2 TN 4 Claims

Light fast polyurethane ionomers are prepared from the usual starting materials for the preparation of polyurethanes and 2 - alkyl - 2-dialkylaminomethyl-1,3-propane diols and quaternising or neutralising agents. The novel polyurethane ionomers may be used from their solutions or as aqueous dispersions for coating or impregnating of various substrates.

3,686,109

AQUEOUS FORMULATION OF WATER SOLUBLE CATIONIC OR ANIONIC VINYL ADDITION POLYMERS WITH WATER SOLUBLE CONDENSATION POLYAMIDES

Paul H. Aldrich, Wilmington, Del., Don G. Bartell, Richmond, Va., and Herbert H. Espy, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,260
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR 5 Claims

The invention relates to aqueous formulations and process of preparing. The formulations are stable and readily dilutable with water. These formulations include high molecular weight water-soluble cationic or anionic vinyl addition polymers in admixture with certain water-soluble condensation polymers and water, the condensation polymers being polyamides or polyureylenes. The viscosities of the formulations are surprisingly less than the viscosities of binary formulations with the same proportions of vinyl addition polymers and water. Two processes of preparing these formulations are described.

3,686,110

1-OXYBENZIMIDAZOLES

Michael H. Fisher, Somerville, Dale R. Hoff, Basking Ridge, and Richard J. Bochis, East Brunswick, N.J., assignors to Meuch & Co., Inc., Rahway, N.J.

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,223
Int. Cl. C07d *99/06*
U.S. Cl. 260—302 H 3 Claims

Benzimidazoles substituted in the 2- and, optionally, in the 5- and/or 6-positions and characterized by having an ether or ester group in the 1-position are active as anthelmintics and as pesticides.

3,686,111

NON-AQUEOUS POLYMERIC PSEUDO-DISPERSION

Joseph M. Makhlouf, Mars, and Samuel Porter, Jr., Tarentum, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed June 22, 1970, Ser. No. 48,510
Int. Cl. C08f *45/28, 47/20;* C08j *1/46*
U.S. Cl. 260—31.2 12 Claims

A non-aqueous pseudo-dispersion of polymeric particles is formed by polymerizing at least one ethylenically unsaturated monomer in a dispersing liquid of aliphatic hydrocarbon and an active solvent for the polymer in the presence of a polymerizable ethylenically unsaturated carboxylic acid, an imine, and a dispersion stabilizer which is a branched copolymer having two types of polymeric components of which one type is solvated by the dispersing liquid and the other type is an anchor polymer of different polarity to the first type and being relatively non-solvatable by the dispersing liquid and being capable of being anchored to the polymerized particles of the ethylenically unsaturated monomer and said anchor polymer containing pendant groups capable of copolymerizing with ethylenically unsaturated monomers. The resulting polymer is stable upon the addition of large amounts of active or coalescing solvents.

In addition to the importance of this polymer as a protective coating, it is an excellent dispersant for the grinding of pigments and especially carbon black pigments.

3,686,112

PROCESS FOR POLYMERIZING ACRYLONITRILE

August Vrancken, 19 Telemachuslaan, Brussels 19, Belgium, and Cyrille Van Eygen, 8 Avenue Delleur, Brussels 17, Belgium

No Drawing. Filed Oct. 6, 1969, Ser. No. 864,164
Int. Cl. C08f *3/76, 45/144*
U.S. Cl. 260—32.6 N 14 Claims

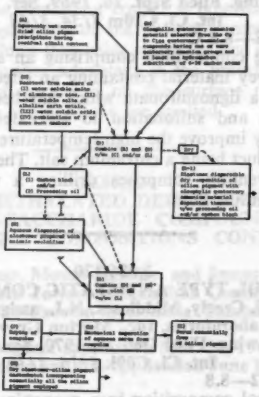
A continuous method for the polymerization of acrylonitrile to produce a spinnable solution of polyacrylonitrile comprising maintaining a polymerization system comprising monomeric acrylonitrile, a dialkylamide and polymeric acrylonitrile in a concentration of at least 25% by weight, the weight ratio of monomeric acrylonitrile to dialkylamide being maintained at at least 1.63:1. The reaction is conducted in the presence of a redox catalyst at a temperature between 40° and 70° C.

3,686,113

SILICA PIGMENTS AND ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,420 and Ser. No. 458,379, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,458
Int. Cl. C08c *11/10;* C08d *9/00*
U.S. Cl. 260—33.6 AO 6 Claims



Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation, with (2) a quantity of olephilic quaternary ammonium material, (3) combining the resulting treated wet silica pigment with an aqueous dispersion of the elastomer containing an anionic dispersing agent, with or without (4) carbon black and/or processing oil, and (5) with selected reactant-coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. Prior to combination with the elastomer dispersion the treated alkaline silica pigment may be recovered as a useful dispersible alkaline silica pigment product, or the wet pigment may be treated with water soluble salts of aluminum or zinc and/or with mineral acid, as well as with the oleophilic material, and after such treatment the resulting pigment composition may be recovered from the slurry as a useful dispersible silica pigment product, or the so treated wet silica pigment may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.

3,686,114

PROCESS FOR PREPARING A DISPERSION OF POLYMER PARTICLES IN AN ORGANIC LIQUID

Morice William Thompson, Maidenhead, and Derek John Walbridge, Slough, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 568,113, July 27, 1966. This application Mar. 6, 1970, Ser. No. 17,337
Int. Cl. C08f *47/20;* C08j *1/46*
U.S. Cl. 260—34.2 9 Claims

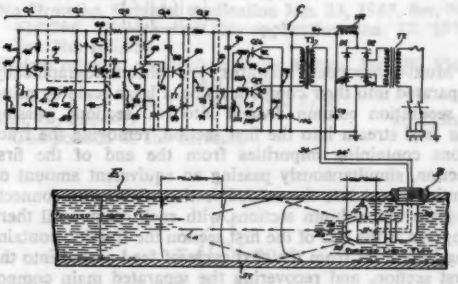
A process for making a dispersion of polymer particles in an oragnic liquid. Monomer is polymerized in the liquid and, in an initial seed nucleation stage, seed particles are formed. As polymerization proceeds, relatively few additional particles are formed, but the seed particles grow in size. Then, during a re-nucleation stage, a second group of particles is formed. As the process continues, groups of particles grow. Consequently, the initial particles are bigger than those formed during nucleation. The dispersion has, as a result, families of particles of different sizes.

3,686,115

ULTRASONIC APPARATUS AND METHOD FOR THE PURIFICATION OF FLUIDS

Charles E. Farman, 1521 Roanne Drive, La Habra, Calif. 90631; and Thomas C. Green, Fullerton, Hurley D. Pepper, Long Beach, and Samuel Slone, Sepulveda, Calif.; said Green, Pepper, and Slone assignors to said Farman

Filed June 18, 1970, Ser. No. 47,438
Int. Cl. B01d *43/00*
U.S. Cl. 210—19 12 Claims



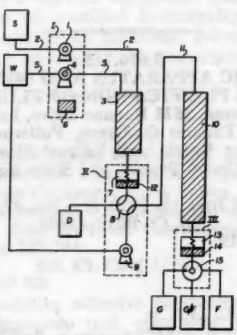
A method and apparatus for the degassing of and continuous processing of liquid in a flow line to deactivate the shear susceptible chemical compounds and/or to kill the microorganisms contained therein. Polluted water containing shear susceptible chemicals and aerobic and/or anaerobic microorganisms is purified while in transit, by transferring energy into the moving liquid by means of an ultrasonic generator driving a transducer immersed in the liquid in a unique disposition, the impedance of

the generator and immersed transducer per se being matched. A feature of the invention is the immersion of the transducer in liquid to be degassed and/or in the column of liquid being processed and its axial disposition focused in the direction of flow, and which affects the entire column of liquid in the flow line.

3,686,116
SEMI-PERMEABLE MEMBRANES AND THEIR USE
André Rio, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Sept. 30, 1969, Ser. No. 862,522
Claims priority, application France, Oct. 2, 1968, 168,446
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **4 Claims**

Polyamides of diamines with 5 - amino-isophthalic acid make semi-permeable membranes of good stability and salt rejection.

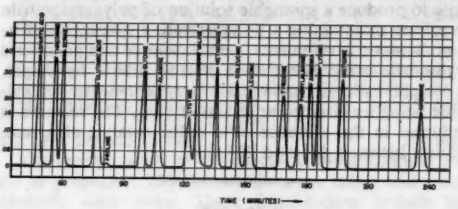
3,686,117
PROCESS FOR THE CHROMATOGRAPHIC SEPARATION OF MULTI-COMPONENT MIXTURES
Karl Lauer, Strahlenburg, and Heinz-Günter Budka and Georg Stoeck, Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany
Filed Sept. 25, 1970, Ser. No. 75,465
Claims priority, application Germany, July 23, 1970, P 20 36 525.7
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **19 Claims**



Multi-component mixtures are chromatographically separated into their components on a large scale by using a separation column divided into two sections, passing the feed stream into the first section, removing the fractions containing impurities from the end of the first section, simultaneously passing an equivalent amount of elution agent into the second section, thereupon connecting the two column sections with each other until there appears at the end of the first section the fraction containing impurities from the next cycle of feed passed into the first section, and recovering the separated main components at the end of the second section.

3,686,118
CHROMATOGRAPHIC METHOD
James R. Benson, Sunnyvale, Calif., assignor to Durrum Chemical Corporation, Palo Alto, Calif.
Filed Jan. 11, 1971, Ser. No. 105,257
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 C **11 Claims**

An improved chromatographic method for separating the components of a mixed amino acid sample using a cation exchange resin by sequential elution. The buffer solution is an alkali metal salt of an acid which has a pK value of less than 5. The buffer solution is further characterized by a pH value of less than 4.4 and a pH variance of less than 30% during the elution cycle. Suitable buffer anions are citrate, acetate, formate or phosphate. The



elution driving force for the more firmly retained amino acids is provided by increasing the cation concentration while maintaining the pH at the above relatively constant level. Separation by means of the above buffer system substantially eliminates baseline shift during subsequent analysis.

3,686,119
DRILLING COMPOSITION AND METHOD
Aaron E. Markham and Carl Adolphson, Bellingham, Wash., assignors to Georgia-Pacific Corporation, Portland, Oreg.
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,498
Int. Cl. C10m *3/34, 3/48*
U.S. Cl. 252—8.5 C **17 Claims**

A drilling composition comprising an aqueous dispersion of clayey material containing an effective dispersing amount of a lignosulfonate which has been subjected to phenolation and sulfonation to an extent sufficient to substantially improve the high temperature stability thereof, the product being a chromium salt. The method of the present invention comprises drilling a well using the aforesaid drilling fluid.

3,686,120
AEROSOL TYPE ANTISTATIC COMPOSITION
Joseph W. Creely, Middlesex, N.J., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Oct. 20, 1970, Ser. No. 82,502
Int. Cl. C09k *3/16, 3/30*
U.S. Cl. 252—8.8 **4 Claims**

An aerosol composition in a pressurized container for imparting antistatic qualities to textiles made of natural or synthetic fibers containing a nonionic surface active agent and a combination of corrosion inhibiting materials.

3,686,121
HYDROCARBON CONVERSION CATALYST
Charles N. Kimberlin, Jr., and Elroy M. Gladrow, East Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,975
Int. Cl. B01j *11/40;* **C10g** *11/02*
U.S. Cl. 252—455 Z **7 Claims**

Improved hydrocarbon conversion catalyst comprises at least two crystalline aluminosilicate zeolites having essentially the same crystal structures, but having substantially different SiO_2/Al_2O_3 molar ratios. Mixtures of zeolites X and Y are preferred, particularly when embedded in a matrix including clays and/or silica-alumina.

3,686,122
PIEZOELECTRIC MATERIALS

Noboru Ichinose, Harutoshi Egami, Katsunori Yokoyama, and Yohachi Yamashita, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 26, 1971, Ser. No. 147,150
Claims priority, application Japan, May 28, 1970, 45/45,197
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 1 Claim

Piezoelectric materials of a ternary metal oxide system comprising 0.3 to 20.0 mole percent of $A(Me_{1/2}Te_{1/2})O_3$ (where A denotes at least one metal selected from the group of barium, strontium and calcium and Me represents at least one metal selected from the group of magnesium and zinc), 57.0 to 35.0 mol percent of $PbTiO_3$ and 55.0 to 25.0 mol percent of $PbZrO_3$.

3,686,123
CLEANING COMPOSITION

Ueki Hiroshi, Yokohama-shi, Japan, assignor to Kurita Industrial Co., Ltd., Osaka-shi, Japan

No Drawing. Continuation of abandoned application Ser. No. 784,217, Dec. 16, 1968. This application Apr. 5, 1971, Ser. No. 131,498
Int. Cl. B08b *3/08, 3/09*
U.S. Cl. 252—87 7 Claims

The present invention provides cleaning agent compositions comprising at least one compound selected from the group consisting of acids such as hydrochloric acid, etc., at least one compound selected from the group consisting of thiourea and thiourea derivatives and at least one compound selected from the group consisting of hydrazine and hydrazine compounds. The compositions are suitable for removing copper containing scales. The removal of scales containing copper is now made possible by a single application of the present compositions, the removal procedures thus being simplified and saving much time. A still further advantage is the prevention of the development of corrosion on the surface of the steel onto which the compositions are applied.

3,686,124
CARBOXYMETHYLATED DERIVATIVES OF DI- AND TRI-SACCHARIDE COMPOUNDS AND DETERGENT COMPOSITIONS CONTAINING THEM

Warren I. Lyness, Mount Healthy, and James E. Thompson, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Mar. 28, 1969, Ser. No. 811,605. Divided and this application June 1, 1971, Ser. No. 148,889
Int. Cl. C11d *3/22*
U.S. Cl. 252—89 4 Claims

Carboxymethylated derivatives of disaccharide compounds such as sucrose and lactose and trisaccharide compounds such as raffinose are provided. These compounds are useful as sequestering agents, e.g., water softeners, and also as detergency builders in detergent compositions. Built detergent compositions are also provided.

3,686,125
SOLVENT ABSORBENT METHOD AND PRODUCT APPLICATION

Hobson Miller, New York, N.Y., assignor to United States Banknote Corporation, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 869,298
Int. Cl. C11d *17/04*
U.S. Cl. 252—90 4 Claims

A method for removing spots and other similar dirt and stains from fabrics and other materials and a dirt and stain remover whereby a solvent and adsorbent such as a chalky powder are applied independently instead of in combination to increase the effectiveness of the cleaner in comparison with products which apply the solvent and adsorbent in combination. The preferred way of carrying out this method is by two separate aerosol, roll-on or other similar containers—one containing a detergent solvent and the other an adsorbent powder, preferably mixed with enzyme crystals. One product for carrying out this separate application is a disposable paper hand mitt designed to be used only once and having microcapsules containing a solvent which may be combined with liquid detergent lodged in one side thereof so that when that side is rubbed on a stained or dirty fabric, the microcapsules rupture and the solvent flows into the fabric or other material and mobilizes the dirt or other stains. After the microcapsules are applied, the mitt can be simply reversed on the hand, and the other side, which preferably contains an adsorbent material, such as loose particles of chalk mixed with crystals of cleaning enzymes, applied to the dirt or stain so that the solvent, as well as the dirt or stain mobilized by it, are attracted to the adsorbent for easy removal of both, and at the same time the enzymes assist in removing the spot.

3,686,126
BLEACHING AND SOFTENING AGENT

Alfred Smeets, Tirlemont, Belgium, assignor to Citrex, S.A., Saint-Gilles-lez, Brussels, Belgium

No Drawing. Filed June 15, 1970, Ser. No. 46,471
Claims priority, application Great Britain, June 17, 1969, 30,639/69
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 6 Claims

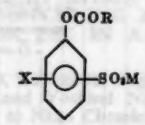
The present invention provides an improved bleaching and water-softening agent in the form of a homogeneous liquid, comprising an aqueous solution containing sodium tripolyphosphate, hydrogen peroxide, an organic sequestering agent and water.

3,686,127
DETERGENT BLEACH

Jan Boldingh and Lammert Heslinga, Vlaardingen, Netherlands, and Ernst Schmidl, Saint Andra Sordern, and Rudolf Syrovataka, Vienna, Austria, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Original application Jan. 23, 1967, Ser. No. 610,796. Divided and this application Jan. 12, 1971, Ser. No. 105,954
Claims priority, application Great Britain, Jan. 28, 1966, 4,027/66
Int. Cl. C11d *7/18, 7/56*
U.S. Cl. 252—99 10 Claims

Compounds of the formula



where X is C_{6-17}, preferably C_{8-14}, alkyl or acyl; R is H or C_{1-7} alkyl; M is alkali metal, ammonium or substituted ammonium. The compounds undergo perhydrolysis with aqueous hydrogen peroxide to give percarboxylic acids which are good low-temperature bleaching agents. As well as being bleached precursors the compounds and their perhydrolysis products have detergent properties.

The compounds are therefore suited for incorporation in washing products.

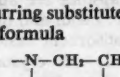
3,686,128

WASHING, BLEACHING AND CLEANSING AGENTS CONTAINING POLY - (N-TRICARBALLYLIC ACID)-ALKYLENEIMINES

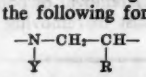
Achim Werdehausen, Monheim, and Peter Krings, Krefeld, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Dec. 1, 1969, Ser. No. 881,306
Claims priority, application Germany, May 13, 1969, P 19 24 300.6; July 2, 1969, P 19 33 511.6
Int. Cl. C11d 7/56
U.S. Cl. 252—99 7 Claims

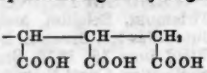
A washing, bleaching and cleansing agent having a content of from 50% to 99.9%, by weight, of customary components of washing, bleaching and cleansing agents and from 0.1% to 50%, by weight, of salts of poly-(N-alkylcarboxylic acid)-alkyleneimines having an average molecular weight of from 430 to 500,000 in which at least one third of the recurring substituted alkyleneimine groups have the following formula



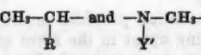
and the remainder of the recurring substituted alkyleneimine groups have the following formula



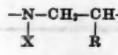
wherein, in both formulas, R represents a member selected from the group consisting of hydrogen and methyl, X represents



and Y represents a member selected from the group consisting of hydrogen



and Y' represents a member selected from the group consisting of hydrogen and

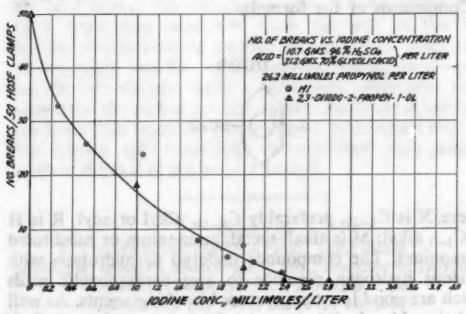


3,686,129

HYDROGEN EMBRITTLEMENT PREVENTION

Millard U. Loucks, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of application Ser. No. 710,343, Mar. 4, 1968. This application Jan. 8, 1971, Ser. No. 105,122
Int. Cl. C11d 7/28; C23g 1/06
U.S. Cl. 252—147 8 Claims


NO. OF BREAKS VS. IODINE CONCENTRATION
ACID = (107 GMS. 96% H_2SO_4 / 212 GMS. 70% GLYCOLIC ACID) PER LITER
26.3 MILLIMOLES PROPYNOL PER LITER
1
▲ 2,3-DIIODO-2-PROPEN-1-OL
NO. BREAKS/50 HOSE CLAMPS
IODINE CONC., MILLIMOLES/LITER

The hydrogen embrittlement which normally occurs when high strength metal parts are immersed in acid-cleaning solution, is minimized or eliminated by adding certain combinations of (1) mono-alkynols and (2) iodine compounds which are either iodo-alkenols or suppliers of iodide ion. The molar concentrations of both alcohol and iodine compound should exceed specified threshold values.

3,686,130

TERNARY AZEOTROPIC COMPOSITIONS

Oliver A. Barton, Florham Park, N.J., and Kevin P. Murphy, Orchard Park, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,243
Int. Cl. C11d 7/50; C23g 5/02
U.S. Cl. 252—171 1 Claim

Tetrachlorodifluoroethane (sym-, asym-, and mixtures thereof), secondary butanol and nitromethane form ternary azeotropic mixtures which are constant boiling. These azeotropes are useful as solvents for cleaning printed circuit boards and the like.

3,686,131

AZEOTROPIC COMPOSITION OF TETRACHLORODIFLUOROETHANE ISOPROPANOL AND WATER

John Allan Schofield, 9 Buxton Lane, Riverside, Conn. 06878

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,209
Int. Cl. C11d 7/50
U.S. Cl. 252—171 2 Claims

The disclosure relates to azeotropic mixtures of tetrachlorodifluoroethane, isopropanol and water.

3,686,132

FORMULATION METHOD OF VULCANIZATION ACCELERATORS

Seiji Sagawa, Hirataka-shi, Haruo Kunihiro, Takasuki-shi, Osamu Kimura, Toyonaka-shi, Kenichiro Numata, Nishinomiya-shi, and Masatoshi Inoue, Toyonaka-shi, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka-shi, Osaka-fu, Japan

No Drawing. Filed July 17, 1970, Ser. No. 55,940
Claims priority, application Japan, July 22, 1969, 44/58,252
Int. Cl. C09k 3/00
U.S. Cl. 252—182 6 Claims

A method for processing vulcanization accelerators which comprises heating a mixture of a vulcanization accelerator, for example, sulfenamides or thiurams, and a hydrocarbon to make the vulcanization accelerator oily and pouring the oily product into an aqueous medium to form small spheres of said accelerator. The resultant formulation has an excellent dispersibility into rubber materials and a good surface smoothness.

3,686,133

DISPERSING COMPOSITION

Kenichi Hattori and Tyoji Yamakawa, Wakayama-shi, and Akitoshi Tuji, Wakayama-ken, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed May 15, 1970, Ser. No. 37,938
Claims priority, application Japan, Aug. 21, 1969, 44/66,151
Int. Cl. B01f 17/00, 17/12; C04b 13/00
U.S. Cl. 252—354 3 Claims

A composition of matter, useful as a cement dispersing agent, consists essentially of (a) a salt of a high molecular condensation product of naphthalenesulfonic acid and

formaldehyde, containing not more than 8 weight percent of unreacted naphthalenesulfonic acid and not less than 70 weight percent of high molecular weight condensates having more than five naphthalene nuclei, and (b) a salt of gluconic acid. The cement dispersing agent is mixed with a hydraulic cement composition in order to form cement paste, mortar, concrete or the like.

3,686,134

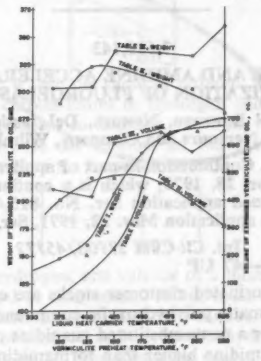
THERMALLY EXPANDING VERMICULITE AND OTHER THERMALLY EXPANDABLE MATERIALS, UTILIZING SAID MATERIALS AS CARRIER AND THE PRODUCTS THEREOF

David W. Robinson, Libby, Mont., assignor to W. R. Grace & Co., Cambridge, Mass.

Continuation of application Ser. No. 845,762, July 29, 1969, which is a continuation-in-part of application Ser. No. 527,765, Feb. 16, 1966, now Patent No. 3,459,531. This application Feb. 25, 1971, Ser. No. 118,712

Int. Cl. C04b 31/26

U.S. Cl. 252—378 8 Claims



The expansion of vermiculite is enhanced and more efficiently performed by preheating the vermiculite while maintaining its water content prior to thermal expansion. In a preferred embodiment, the vermiculite is preheated in a saturated atmosphere and then expanded in a liquid heat carrier. In another aspect, a slight increase in moisture content of the vermiculite is accomplished. By this invention, the quantity of liquid heat carrier taken up by the vermiculite is increased as well as the degree of expansion.

3,686,135

STABILIZER FOR HALOGEN-CONTAINING RESINS

Gary R. Mitchener, Lombard, Ill., assignor to MacGregor Lead Company, Chicago, Ill.

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,021

Int. Cl. C08f 45/56

U.S. Cl. 252—400 12 Claims

An improved stabilizer for halogen-containing resins is prepared by reacting an aqueous solution of lead oxide with a particular acid component. The acid component may be fluorosulfonic acid, a mixture of sulfuric and hydrofluoric acids, or a mixture of all three acids. The invention also relates to a method for preparing the stabilizer compositions and to halogen-containing resins stabilized with such compositions.

3,686,136

OLEFIN DISPROPORTIONATION

Gerald Doyle, Somerville, N.J., assignor to Esso Research and Engineering Co.

No Drawing. Filed Oct. 1, 1969, Ser. No. 862,970

Int. Cl. C07c 3/62

U.S. Cl. 252—429 B 18 Claims

A novel catalyst is manufactured by the reaction of a metallic composition having the formula $R[M(CO)_5X]$ wherein R is selected from the group consisting of alkali metal ions and cations of the type J_4Q wherein Q is selected from the group consisting of nitrogen, phosphorous and arsenic, and J is selected from the group consisting of hydrogen and C_1–C_{30} hydrocarbyl radicals, M is a Group VI–B metal and X is a uninegatively charged ligand, selected from the group consisting of halide, cyanide, cyanate, thiocyanate, azide, acetate, trifluoroacetate and stearate, with an activator, said activator consisting essentially of an organometallic compound, said organometallic compound selected from the group consisting of compounds having the general formula r_nLY_m wherein r is independently selected from the group consisting of C_1 to C_{30} hydrocarbyl radicals, L is selected from the group consisting of Group I–A, II–A and III–A metals, said metals having an atomic number of from 3 to 31, Y is a halide, n is an integer of from 1 to 3, and m is an integer of from 0 to 3, n and m having a total equal to the valence of L, at a temperature of from about −100 to +150° C. and a pressure of between 0.1 and 1,000 atmospheres, the molar ratio of organometallic compound to metallic composition varying between 0.5:1 and 50:1, whereby a catalyst is formed.

3,686,137

SULFIDE PRECIPITATED CATALYSTS

Anthony R. Gatti, Pasadena, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,323

Int. Cl. B01j 11/74

U.S. Cl. 252—437 11 Claims

A supported metal sulfide catalyst prepared by impregnating a porous solid catalyst support with an aqueous solution of a salt of a hydrogenation metal component selected from the group consisting of molybdenum, tungsten, iron group metals, and mixtures thereof, precipitating the respective metal sulfides and subsequently drying in an inert atmosphere possesses improved hydrogenation, denitrification and desulfurization activity.

3,686,138

PRODUCTION OF ATTRITION RESISTANT SOLID CATALYSTS CONTAINING ANTIMONY OXIDE SUITABLE FOR USE IN A FLUIDIZED BED REACTION

Takachika Yoshino, Kanagawa, Shigeru Saito, Tokyo, and Yutaka Sasaki and Yoshimi Nakamura, Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,709

Claims priority, application Japan, Nov. 2, 1968, 43/79,619

The portion of the term of the patent subsequent to Apr. 18, 1989, has been disclaimed

Int. Cl. B01j 11/06, 11/32, 11/40

U.S. Cl. 252—456 27 Claims

Process for preparing an attrition resistant solid catalyst containing antimony oxide, suitable for use in a fluidized

bed, essentially comprising the heat treatment of a slurry containing a pentavalent antimony compound, a polyvalent metal compound and a silica sol.

3,686,139

RESISTIVE COATING COMPOSITIONS AND RESISTOR ELEMENTS PRODUCED THEREFROM

Irving Lubin, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,343

Int. Cl. C09c *1/44*; H01b *1/06*

U.S. Cl. 252—511 8 Claims

An electrically resistive coating composition exhibiting outstanding abrasion resistance which comprises an admixture of a selected heat-curable polymeric material and conductive particles, e.g., carbon particles, dispersed therein. These selected polymeric materials include mixtures of trifunctional epoxy resin and phenolic resin; mixtures of epoxy-modified phenolic resin and phenolic resin; mixtures of phenolic resin, melamine resin, or precursors thereof, and epoxy-modified phenolic resin; mixtures of epoxy-modified phenolic resin, phenolic resin, and epoxy resin; and melamine resins.

3,686,140

POLYURETHANE CASTING RESINS CONTAINING ARYL OXYALKANOLS

Hermann Gruber, Leverkusen, and Robert Schmitz-Josten, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 13, 1970, Ser. No. 80,498

Claims priority, application Germany, Oct. 17, 1969, P 19 52 395.6

Int. Cl. C08g *22/16*

U.S. Cl. 260—47 CB 6 Claims

Solvent-free polyurethane casting resins are prepared by mixing a polyisocyanate with a mixture consisting of an hydroxyl-containing polyol and an aryloxyalkanol. These resins are especially suited for use as fillers and for the manufacture of molded articles.

3,686,141

HETEROCYCLIZING OF POLYMER

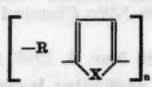
William J. I. Bracke, Brussels, Belgium, assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

Filed June 23, 1970, Ser. No. 49,009

Int. Cl. C08g *25/00*, *33/00*

U.S. Cl. 260—47 UP 33 Claims

New heat resistant heterocyclized polybutadiynylenes of the formula



where R is organic and X is a heterocyclizing radical of the elements sulphur, selenium, tellurium, antimony, arsenic, bismuth, oxygen, phosphorus, boron, and nitrogen and which are formed by reacting polymers containing butadiynylene groups with a heterocyclizing compound of these elements having geminal atoms, and this method of making said polymers.

3,686,142

COPOLYMERS OF TRIOXANE WITH ANY ONE OF VINYL CYCLOHEXENE DIOXIDE; RESORCINOL DIGLYCIDYL ETHER, A DIGLYCIDYL ETHER OF 2,2'-BIS(4-HYDROXY PHENYL) PROPANE AND THE TRIGLYCIDYL ETHER OF TRIMETHYLOLPROPANE

Walter E. Heinz, New Providence, and Francis B. McAndrew, Springfield, N.J. (both % Celanese Corp. of America, Summit, N.J. 07901)

No Drawing. Continuation of application Ser. No. 864,959, Oct. 6, 1969, which is a continuation of application Ser. No. 708,428, Feb. 26, 1968, which is a continuation of application Ser. No. 444,787, Apr. 1, 1965, which is a continuation-in-part of application Ser. No. 229,715, Oct. 10, 1962, which in turn is a continuation-in-part of application Ser. No. 153,720, Nov. 20, 1961, all now abandoned. This application July 23, 1970, Ser. No. 64,050

Int. Cl. C08g *1/04*, *30/00*

U.S. Cl. 260—47 FP 10 Claims

An improved moldable terpolymer of trioxane, cyclic ether and a compound selected from the group consisting of vinyl cyclohexane dioxide, resorcinol diglycidyl ether and a diglycidyl ether of 2,2'-bis(4-hydroxyphenyl) propane is described.

3,686,143

GUANIDINE AND AMIDINE ACCELERATORS FOR VULCANIZATION OF FLUOROELASTOMERS

John Michael Bowman, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 32,720, Apr. 28, 1970, which is a continuation-in-part of abandoned application Ser. No. 815,497, Apr. 11, 1969. This application Mar. 22, 1971, Ser. No. 126,928

Int. Cl. C08f *27/08*, *45/72*

U.S. Cl. 260—47 UP 16 Claims

Highly fluorinated elastomer stocks are cured by heating with aromatic polyhydroxylic compounds in the presence of either a pentasubstituted guanidine or an N,N,N'-substituted amidine higher than formamidine. The guanidine and amidine substituents can be alkyl, cycloalkyl, or aralkyl radicals of 1–20 carbon atoms. Guanidine substituents also can be aryl radicals, provided that no more than two such groups are present. Instead of a pentasubstituted guanidine, its salts with either organic or inorganic acids can be used. The curable elastomer composition also contains a metal compound such as a divalent metal oxide or hydroxide, or a blend of the oxide or hydroxide with a metal salt of a weak acid.

3,686,144

RECOVERY OF YEAST PROTEINS IN REFINED FORM AND WITH HIGH YIELD BY DEHYDRATION WITH AN ALKANOL FOLLOWED BY ACIDIC ESTERIFICATION

Masaki Tamura, Minami, Masayuki Yoda, Koenji, Seishi Shinya, Suginami, and Yaichi Ayukawa, Tokyo, Japan, assignors to CPC International Inc.

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,244

Int. Cl. A23j *1/18*

U.S. Cl. 260—112 R 20 Claims

Protein is extracted from a microbiological protein source by solubilizing the protein by the formulation of protein that is esterified with a lower alkanol having up to three carbon atoms. The solubilized protein is then extracted, precipitated, and recovered. The process is particularly suited to the recovery of protein from yeast.

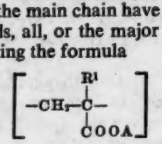
3,686,145

HYDROXYCARBOXYLIC ACID POLYMERS FROM POLYACROLEINS

Heinz Haschke, Grossauheim, and Erich Bäder, Hanau am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

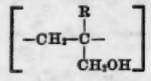
No Drawing. Filed Jan. 30, 1970, Ser. No. 7,251
Claims priority, application Germany, Feb. 1, 1969, P 19 04 941.3
Int. Cl. C08f 3/40
U.S. Cl. 260—67 U 4 Claims

Solid linear or cross-linked hydroxycarboxylic acid polymers which in the main chain have predominantly carbon-to-carbon bonds, all, or the major part of the units in the main chain, having the formula



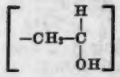
(I)

and



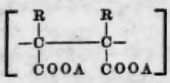
(II)

and/or



(III)

wherein R and R′ are the same or different and are alkyl having 1 to 6 carbon atoms or hydrogen and wherein R^1 may also be halogen. In addition, there may be a minor amount, relative to the number of the units (I), (II) and (III), of units of the formula



(IV)

wherein A is hydrogen, one valence of a monovalent or a polyvalent metal or ammonium. All of these units are arranged in random sequence and their number is such that the ratio of carboxyl or carboxylate to hydroxyl groups is between 1.1 and 16. The minimum degree of polymerization is 3; preferably, it is not above 5000, and particularly between 3 and 600.

The polymers are valuable as complexing agents.

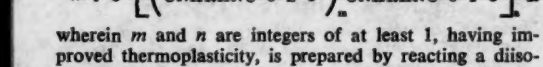
3,686,146

THERMOPLASTIC POLYURETHANES FOR ADHESIVES, COATINGS AND MOLDINGS

Hachiro Goto, Ibaraki, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Mar. 23, 1970, Ser. No. 21,846
Claims priority, application Japan, Mar. 25, 1969, 44/22,572
Int. Cl. C08g 22/10, 41/04
U.S. Cl. 260—75 NP 9 Claims

Thermoplastic polyurethane of the formula



wherein *m* and *n* are integers of at least 1, having improved thermoplasticity, is prepared by reacting a diisocyanate of the formula

OCNRNCO

with a hydroxyl-terminated compound of the formula HO—Z—OH where Z stands for residues selected from the group consisting of aliphatic polyether residues and aliphatic polyester residues which is liquid at a temperature at least 80° C. lower than the crystal melting point of a polyester of the formula HO—Y—OH where Y stands for polyester residues containing terephthalic acid and ethylene glycol as the main component and having hydroxyl groups at both ends to form a prepolymer and reacting such prepolymer with the polyester having a crystal melting point of 150 to 220° C., the reactions being carried out under the specified conditions.

3,686,147

SULFUR-VULCANIZABLE POLYURETHANES HAVING MULTIPLE TERMINAL ALLYL GROUPS

Jean-Marie Massoubre, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

No Drawing. Filed Oct. 15, 1970, Ser. No. 81,170
Claims priority, application France, Oct. 27, 1969, 6936838
Int. Cl. C08g 22/16
U.S. Cl. 260—75 NP 13 Claims

Each end of the chain of a sulfur-vulcanizable unsaturated polyurethane has at least three and preferably four ethylene double bonds.

3,686,148

FIBER-FORMING POLYAMIDES WITH AN INCREASED CONTENT OF AMINO GROUPS PROVIDED BY A CYCLOALIPHATIC-AROMATIC POLYAMINE

Walter Fester, Konigstein, Taunus, Ernst Hanschke, Burghausen, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,299
Claims priority, application Germany, Aug. 26, 1969, P 19 43 252.1
Int. Cl. C08g 20/20
U.S. Cl. 260— 78 TF 12 Claims

Novel film and fiber-forming modified polyamides with an increased content of amino groups are obtained, if in the preparation of polyamides from the common starting compounds, polyamines are added which have partly aromatic, and partly cyclo-aliphatic molecular structural units, optionally in admixture with cyclo-aliphatic polyamines which may also have 1 aliphatic C-atom between the cyclo-aliphatic rings and the amino groups.

3,686,149

PROCESS FOR PREPARATION OF AROMATIC POLYBENZIMIDAZOLES

Yoshio Ohfuji, Kurashiki, Japan, assignor to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,282
Claims priority, application Japan, Oct. 10, 1969, 44/82,092; Apr. 21, 1970, 45/34,585
Int. Cl. C08g 33/02
U.S. Cl. 260—78.4 N 13 Claims

A process for preparing aromatic polybenzimidazoles is provided which comprises heating a mixture of an aromatic tetramine, an aromatic dinitrile and an aromatic triamino-monohalo compound or an aromatic diamino-dihalo compound at a temperature sufficient to effect a polycondensation reaction.

3,686,150

FUNCTIONAL TERPOLYMERS OF N-VINYL LACTAMS

Eugne S. Barabas, Watchung, and Marvin M. Fein, Westfield, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,740
Int. Cl. C08f 15/40
U.S. Cl. 260—78.5 R 13 Claims

Functional terpolymers are described of an N-vinyl lactam, a mono or half ester of an unsaturated dicar-

boxylic acid, and an ethylenically unsaturated compound (e.g. an alkyl acrylate), which are useful for forming coatings, sizes, polishes, adhesives and in related areas.

3,686,151

TERPOLYMERS OF DIALLYLAMINE

Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,473

Int. Cl. C08f *13/06*

U.S. Cl. 260—79.3 A **7 Claims**

Linear terpolymers of a diallylamine, sulfur dioxide and acrylamide or a lower alkyl substituted acrylamide are described. The terpolymers are produced by cyclopolymerizing a salt of the appropriate diallylamine in the presence of sulfur dioxide and the amide using a free radical catalyst. The terpolymers are useful as treating agents for paper and textiles and as intermediates for the formation of derivatives which are the resinous reaction products of the terpolymer with an epihalohydrin or an aldehyde.

3,686,152

Patent Not Issued For This Number

3,686,153

PROCESS FOR THE PREPARATION OF LINEAR HIGH MOLECULAR WEIGHT COMPOUNDS

Hisatake Ono, Syu Watarai, and Chiaki Osada, all of 105 Ohaza Mizonuma, Asaka-shi, Saitama, Japan

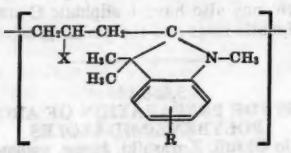
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,218

Claims priority, application Japan, Oct. 17, 1969, 44/83,028

Int. Cl. C08f *7/12, 15/16, 15/22*

U.S. Cl. 260—85.5 R **7 Claims**

A high molecular weight polymeric compound represented by the following recurring unit



wherein R is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group having 1 to 4 carbon atoms, —OR′ and —COOR′, in which R′ is an alkyl group having from 1 to 4 carbon atoms, is disclosed. A process for the preparation of these compounds is also disclosed.

3,686,154

COMPOSITION AND PROCESS FOR PREPARING CROSS-LINKED FLUORO-POLYMER PRODUCTS

Ausat Ali Khan, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,179

Int. Cl. C08f *15/02, 27/08*

U.S. Cl. 260—87.5 A **10 Claims**

A curable fluoropolymer composition which will undergo cross-linking when heated can be made by mixing a copolymer of tetrafluoroethylene and a perfluoroalkyl perfluorovinyl ether with a polyfunctional tertiary amine. The composition can be used to make cured or cross-linked chemical and heat-resistant fluoropolymer products having an unusual combination of properties including insolubility in solvents for the uncured copolymer, and the ability to be molded or remolded under heat and pressure after the cross-linking operation.

3,686,155

NOVEL PROCESS FOR COPOLYMERIZATION OF ALPHA OLEFINS AND ETHYLENE

Joseph Wagensommer, 57 Barchester Way, Westfield, N.J. 07090

No Drawing. Filed Apr. 10, 1970, Ser. No. 27,436

Int. Cl. B01j; C08f *15/40*

U.S. Cl. 260—88.2 **13 Claims**

This invention is directed to a novel process for preparing copolymers of ethylene and certain alpha olefins (including terpolymers with dienes) by reaction in the presence of vanadium and titanium catalysts together with aluminum cocatalysts.

3,686,156

CURING DIALKYL XANTHOGEN DISULFIDE-MODIFIED CHLOROPRENE SOL POLYMERS WITH AMINES

John F. Hagman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 26, 1970, Ser. No. 40,706

Int. Cl. C08c *11/44*; C08d *3/14*

U.S. Cl. 260—92.3 **10 Claims**

Sol polymers of chloroprene having a Mooney viscosity (ML 1+2.5/100° C.) greater than 25, polymerized in the presence of dialkyl xanthogen disulfides but no elemental sulfur, are given increased tensile strengths, as compared with corresponding polychloroprenes polymerized in the presence of alkyl-mercaptans instead of the xanthogen disulfides, by curing in the presence of zinc oxide with an organic amine of the formula

wherein R is an organic radical and R′ and R″ are each hydrogen or an organic radical, each R is attached to the nitrogen by one covalent bond, and in each organic radical present the carbon atom directly attached to the nitrogen atom is free of substituents, other than carbons, attached thereto by a double bond.

3,686,157

Patent Not Issued For This Number

3,686,158

PROCESS FOR PREPARING COLORLESS, HIGH-VINYL DIENE POLYMERS

Thomas C. Bouton, Akron, and Shingo Futamura, Cuyahoga Falls, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,413

Int. Cl. C08d *3/04, 3/08, 3/12*

U.S. Cl. 260—94.2 M **6 Claims**

In the polymerization of liquid diene monomer catalyzed by a lithium alkyl to produce a high-vinyl butadiene polymer, dimethyl ether is used to serve as a polar catalyst modifier for high-vinyl production and also as the auto-refrigerant to remove the heat of polymerization. While dimethyl ether is generally not regarded as a suit-

able polar component for this purpose, it is found to be ideally suited as the polar component under the conditions described herein and also particularly effective in controlling the polymerization temperature under the pressure and temperature conditions found to be suitable, namely no more than 100° F. (38° C.), advantageously no more than 80° F. (27° C.), preferably about 40° F. (5° C.), and pressures of about 25, 65 and 90 p.s.i.g. respectively for these corresponding temperatures.

3,686,159

ETHYLENE POLYMERIZATION

Ronald Bauer, Orinda, Harold Chung, Berkeley, Kenneth W. Barnett, San Leandro, Peter W. Glockner, Alameda, and Wilhelm Keim, Berkeley, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 886,788, Dec. 19, 1969. This application Sept. 8, 1970, Ser. No. 70,583

Int. Cl. C08f *1/74, 3/06*

U.S. Cl. 260—94.9 C 15 Claims

Ethylene is polymerized to products of high linearity in the presence of a nickel complex of stable phosphorus ylids containing a conjugated carbonyl-containing functional group or a conjugated cyclic ring as a second chelating site.

3,686,160

PROCESS FOR THE POLYMERIZATION OF ETHYLENE COMPRISING THE SIMULTANEOUS USE OF TWO ZIEGLER-TYPE CATALYST COMPLEXES

James V. Cavender, Jr., Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,289

Int. Cl. C08f *1/42, 3/06*

U.S. Cl. 260—94.9 B 5 Claims

Polyolefins particularly suited for blowing into bottles are prepared by polymerizing olefins using a Ziegler-type catalyst which is prepared either by (1) combining a first stream of a complex comprised of an admixture of an organometallic compound, such as an organoaluminum compound, and a reducible heavy metal compound, such as a salt of titanium, in which the mole ratio of metal in said organometallic compound to the metal in said reducible heavy metal compound is relatively high and a second stream of a complex comprised of a similar admixture of compounds except that the mole ratio of the metallic constituents is relatively low and feeding the combined stream continuously to the polymerization zone or (2) feeding two such complex streams directly into the polymerization zone.

3,686,161

METHOD OF SEPARATING LIGNOSULFONIC ACIDS

Leif Jantzen, Oslo, Norway, assignor to Arthur C. Trask & Sons (a copartnership composed of Arthur C. Trask, R. Hugh Trask, and Eugene A. Trask)

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,950

Int. Cl. C07g *1/00*

U.S. Cl. 260—124 R 8 Claims

A method of separating alpha high molecular weight lignosulfonic acids from an aqueous liquid such as sulfite liquor from a sulfite paper pulp process containing these acids which comprises treating the liquid with aldehyde treated tanned hide for a time sufficient to combine chemically the acid with the aldehyde hide and removing the acid therefrom by treating with an aqueous alkali. After the alpha acids have been removed the aldehyde hide is usable for removing beta low molecular weight lignosulfonic acids from the remaining liquid.

3,686,162

MONOAZO DYESTUFFS CONTAINING A BENZTHIAZOLYL RADICAL

Klaus Artz, Muttenz, Switzerland, assignor to Ciba-Geigy AG Muttenz, Switzerland

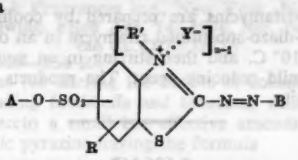
No Drawing. Filed Jan. 22, 1970, Ser. No. 5,159

Claims priority, application Switzerland, Jan. 24, 1969, 1,105/69

Int. Cl. C09b *29/08*

U.S. Cl. 260—158 9 Claims

The invention relates to an azo dyestuff that is free from acidic groups imparting solubility in water and has the formula



in which A represents an aryl residue, R represents a hydrogen atom or an organic residue, $n=1$ or 2, R' represents an alkyl or aralkyl group, Y^- represents an anion and B represents the residue of a coupling component.

3,686,163

DIHYDRODAUNOMYCIN ANTIBIOTIC AND DERIVATIVES THEREOF

Federico Arcamone, Milan, Giuseppe Cassinelli, Rivanazzano, and Sergio Penco and Luigi Tognoli, Milan, Italy, assignors to Società Farmaceutici Italia, Milan, Italy

No Drawing. Filed May 13, 1969, Ser. No. 824,282

Claims priority, application Italy, May 14, 1968, 86,444/68

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 AB 6 Claims

Described is a microbiological process for the preparation of the antibiotic substances dihydrodaunomycin, daunosaminildaunomycin and dihydrodaunomycinone and their salts with pharmaceutically acceptable non-toxic acids. The process comprises growing the microorganism *Streptomyces peucetius* var. *carneus* under aerobic conditions.

3,686,164

SULFURIC ACID MONOESTERS OF TRAGACANTH AND PROCESS FOR THE PREPARATION THEREOF

Richard Unger, Georg Seitz, Michael Klockow, and Werner Mehrhof, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,221

Claims priority, application Germany, Apr. 22, 1969, P 19 20 350.0

Int. Cl. C07c *69/32*

U.S. Cl. 260—234 5 Claims

The sulfuric acid monoesters of tragacanth and their salts have a pepsin-inhibitory effect useful in the treatment of stomach ulcer and gastritis.

3,686,165

2-(DI-LOWER ALKYLAMINOALKYL)-2,3,4,5-TETRAHYDRO-5-PHENYL-1H-2-BENZAZEPIN-1-ONES

Bernard Loev, Broomall, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Sept. 9, 1970, Ser. No. 70,880

Int. Cl. C07d *41/06, 41/08*

U.S. Cl. 260—239.3 B 4 Claims

The compounds are 2-(di-lower alkylaminoalkyl)-2,3,4,5-tetrahydro-5-phenyl-1H-2-benzazepin-1-ones which inhibit gastric acid secretion.

3,686,166

4-DESOXY RIFAMYCIN-SV AND ITS PREPARATION

Nicola Maggi and Piero Sensi, Milan, Italy, assignors to Lepetit S.p.A.-Gruppo per la Ricerca Scientifica e la Produzione Chimica Farmaceutica, Milan, Italy

No Drawing. Filed Oct. 17, 1967, Ser. No. 675,787

Claims priority, application Great Britain Nov. 3, 1966, 44,388/66

Int. Cl. C07d *87/54*

U.S. Cl. 260—239.3 3 Claims

4-desoxy-rifamycins are prepared by cooling a solution of a 4-diazo-substituted rifamycin in an organic solvent to −10° C. and then stirring in an aqueous solution of a mild reducing agent. The products have antibiotic activity.

3,686,167

BENZAZOCINE DERIVATIVES

Hajime Fujimura, Kyoto, Mikio Hori, Gifu, Toru Masuda, Nishinomiya, and Yoichi Sawa and Takeshi Kato, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

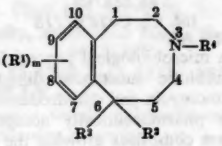
No Drawing. Filed Feb. 10, 1969, Ser. No. 798,148

Claims priority, application Japan, Feb. 9, 1968, 43/8,078; Feb. 29, 1968, 43/13,037; May 24, 1968, 43/35,120

Int. Cl. C07d *41/08, 99/04*

U.S. Cl. 260—239 BB 11 Claims

Benzazocine derivatives of the formula:



(I)

wherein, R^1 represents methoxy, hydroxy, or an acyloxy group, with the proviso that two R^1 groups may together form an alkylenedioxy group, *m* is an integer of 1 to 3, each R^2 represents an alkyl group having at most 4 carbon atoms, and R^4 stands for hydrogen, an aliphatic or cycloaliphatic group having at most 6 carbon atoms, an aralkyl group having up to 10 carbon atoms, an alkylaminocarbonylalkyl or mono- or di-alkylaminoalkyl group wherein the alkyl has at most 3 carbon atoms, alkylcarbonyl of up to 5 carbon atoms, cyclopropylcarbonyl, benzoyl, phenylacetyl, tosyl or tetrahydrofurfuryl group, are non-narcotic analgesic compounds.

3,686,168

PROCESS FOR THE MANUFACTURE OF MONOALKALI METAL SALTS OF α-CARBOXYBENZYLPENICILLIN

Albert E. Timreck, Rego Park, N.Y., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Dec. 30, 1969, Ser. No. 889,328

Int. Cl. C07d *99/16, 99/18*

U.S. Cl. 260—239.1 2 Claims

An improved process for converting crude and amorphous forms of α-carboxybenzylpenicillin and salts thereof to crystalline monoalkali metal α-carboxybenzylpenicillin; with subsequent conversion of said salts to di-alkali metal α-carboxybenzylpenicillin. A composition for parenteral administration consisting of monosodium α-carboxybenzylpenicillin and sodium glycinate is also disclosed.

3,686,169

THIOCYCLOAMIDES

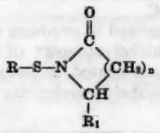
Aubert Yaucher Coran and Joseph Edward Kerwood, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of applications Ser. No. 549,730, May 12, 1966, Ser. No. 579,493, Sept. 15, 1966, and Ser. No. 714,445, Mar. 20, 1968, now Patent No. 3,546,185, dated Dec. 8, 1970. This application July 20, 1970, Ser. No. 56,731

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R 10 Claims

Compounds of the formula



where R is alkyl, aryl or cycloalkyl, R_1 is hydrogen or lower alkyl and *n* is 2 to 9 which are premature vulcanization inhibitors.

3,686,170

NOVEL SUBSTITUTED T-NITROFURFURYLIDENE-AMINO-OXAZOLIDINONES

William Hoyle, Bramhall, and Michael Philip Savage, Cheadle, Cheshire, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 4, 1970, Ser. No. 43,586

Claims priority, application Great Britain, June 5, 1969, 28,421/69

Int. Cl. C07d *85/26*

U.S. Cl. 260—240 A 9 Claims

Compounds of the class of 5-substituted carboxyloxymethyl - 3 - (5 - nitrofurylideneamino) - 2 - oxalidinones have antimicrobial properties; compositions containing such compounds and methods for the treatment of microbial infections and protecting organic material against microbial attack are provided; a typical embodiment is 5-methylcarbamoyloxymethyl - 3 - (5-nitrofurfurylideneamino)-2-oxazolidinone.

3,686,171

N-4-FORMYL-5-AMINO PYRAZOLES

Leo Ralph Swett and James Daniel Ratajczyk, Waukegan, and Patrick Richard Young, Winthrop Harbor, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 672,717, Oct. 4, 1967, now Patent No. 3,544,585, dated Dec. 1, 1970. This application Dec. 2, 1970, Ser. No. 94,588

Int. Cl. C07d *49/20*

U.S. Cl. 260—240 G 1 Claim

A novel series of N'-[4-formyl]-5-amido-pyrazoles which are useful as intermediates in preparing N'-[4-(hydroxymethyl)-5-pyrazolyl]amidines. The amidines are effective anti-inflammatory agents.

3,686,172

DERIVATIVES OF 7-(5-AMINOTETRAZOLYLACETYLAMINO)-CEPHALOSPORANIC ACID

Hans Bickel, Binningen, Johannes Mueller, and Rolf Bosshardt, Arlesheim, Heinrich Peter, Riehen, and Bruno Fechtig, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Filed Dec. 8, 1969, Ser. No. 883,334
Claims priority, application Switzerland, Dec. 12, 1968, 18,516/68; Apr. 23, 1969, 6,150/69
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 5 Claims

7 - (5 - aminotetrazolylacetylamino)-cephalosporanic acid and derivatives thereof. Use: antibiotics.

3,686,173

SUBSTITUTED THIAZOLO[3,2-a]PYRIMIDES

William J. Houlihan, 15 Raynold Road, and Robert E. Manning, 30 Laurel Hill Road, both of Mountain Lakes, N.J. 07046

No Drawing. Continuation-in-part of application Ser. No. 790,451, Jan. 10, 1969, which is a continuation-in-part of abandoned application Ser. No. 748,934, July 31, 1968. This application Dec. 29, 1969, Ser. No. 888,977
Int. Cl. C07d *51/46*
U.S. Cl. 260—251 A 8 Claims

Substituted 3-aryl-2-alkyl thiazolo pyrimidines, e.g., 3-(4'-chlorophenyl) - 2 - ethyl - 3 - hydroxy-2,3,6,7-tetrahydro-5H-thiazolo[3,2-a]pyrimidine, are prepared from 2-haloalkylphenones and 3,4,5,6-tetrahydro-2-pyrimidinethiol and are useful as anti-depressants.

3,686,174

CERTAIN DIGLYCIDYL ESTERS OF N-HETEROCYCLIC COMPOUNDS

Juergen Habermeir Allschwil, Hans Batzer, Arlesheim, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,071
Claims priority, application Switzerland, Nov. 27, 1969, 17,672/69
Int. Cl. C07d *49/32, 51/20, 51/30*
U.S. Cl. 260—257 8 Claims

New diglycidyl ethers of mononuclear five-membered or six-membered, unsubstituted or substituted, N-heterocyclic compounds, containing two NH groups in the molecule, which contain styrene oxide in the form of an adduct, obtained by a reaction of mononuclear, five-membered or six-membered, unsubstituted or substituted N-heterocyclic compounds, for example hydantoin, barbituric acid, uracil, dihydrouracil, parabanic acid and the appropriate derivatives, with styrene oxide to give monoalcohols or dialcohols, and subsequent glycidylation of the OH groups and NH groups to give the corresponding glycidyl ethers. The diglycidyl ethers may be used with common curing agents and are therefore suitable for the manufacture of mouldings, including sheet-like materials.

3,686,175

Patent Not Issued For This Number

3,686,176

1-MORPHOLINO PHENOXY-3-ALKYLAMINO-2-PROPANOLS

Ronald Stiles Stuart, Mount Royal, Quebec, and Burton Kendall Wasson, Valois, Quebec, Canada, assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,858
Int. Cl. C07d *87/40*
U.S. Cl. 260—247.5 R 5 Claims

1 - (morpholinophenoxy) - 3 - (substituted-amino)propan-2-ol compounds that exhibited β-adrenergic blocking properties are described. The compounds ideally are prepared by the reaction of an N-(2,3-epoxypropoxyphenyl) morpholine with an amine or by the reaction of an N-(3-halo-2-hydroxypropoxyphenyl)morpholine with an amine.

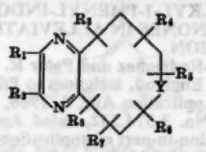
3,686,177

BICYCLIC PYRAZINES HAVING FROM SIX TO TEN CARBON ATOMS IN THE HYDROCARBON RING

Alan O. Pittet, Atlantic Highlands, Michael E. Mason, Fair Haven, Ernst T. Theimer, Rumson, and Merrick S. Tibbetts, Colts Neck, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Apr. 14, 1970, Ser. No. 28,528
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 5 Claims

Processes for altering the flavors of consumable products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one bicyclic pyrazine having the formula



wherein Y is $(—CH_2—)n$, n is an integer from 1 to 5, and R_1, R_2, R_3, R_4, R_5, R_6, R_7, and R_8 are the same or different and represent hydrogen, or alkyl; the products so produced; flavoring and flavor-enhancing compositions containing such bicyclic pyrazines; and novel bicyclic pyrazines and processes for their production.

3,686,178

PREPARATION OF 4-ARYL-2(1H)-QUINAZOLINONES AND THIONES

George A. Cooke, Denville, and William J. Houlihan, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of applications Ser. No. 819,435 and Ser. No. 819,450, Apr. 25, 1969. This application Sept. 16, 1970, Ser. No. 72,797
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 QB 15 Claims

The present invention discloses preparation of 2(1H)-quinazolinones and 2(1H)-quinazolin-thiones from the group of 4-aryl-2(1H)-quinazolinones, 3,4-dihydro-4-aryl-2(1H)-quinazolinones, and 3,4-dihydro - 4 - aryl-2(1H)-quinazolin-thiones involving key intermediates which are N-alkyl-N-arylureas and N-alkyl-N-arylthioureas which are reacted with a benzaldehyde to obtain a 3,4-dihydro-4-aryl-2(1H)-quinazolinone or a 3,4 - dihydro-4-aryl-2-(1H)-quinazolin-thione, respectively, which may be oxidized to obtain 3,4-unsaturated 4-aryl-2(1H)-quinazolinones.

3,686,179

Patent Not Issued For This Number

3,686,180

SUBSTITUTED 9-LOWER ALKYLACRIDINE-4-CARBOXYLIC ACIDS

Blaine M. Sutton, Hatboro, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,964
Int. Cl. C07d *37/20*
U.S. Cl. 260—279 R 6 Claims

The compounds are substituted 9-lower alkylacridine-4-carboxylic acids having anti-arthritic, anti-inflammatory, antipyretic, analgesic, antiviral and immunosuppressant activity.

3,686,181
QUINOXALINE-DI-N-OXIDE-LACTONES AND THEIR PRODUCTION

Kurt Ley, Odenthal-Globusch, Ulrich Eholzer, Cologne-Stammheim, and Florin Seng, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 29, 1969, Ser. No. 872,384
Claims priority, application Germany, Nov. 8, 1968, P 18 07 735.5
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 10 Claims

New quinoxaline-di - N - oxide-lactones having antifungal activity are provided which are prepared from a 2 - acyloxy-methyl-3-carboxamido-quinoxaline - di - N-oxide-(1,4) starting material by reaction with an inorganic or organic acid at a temperature of 0° to 100° C. in a diluent.

3,686,182
3-AMINOALKYL-1-PHENYL-INDOLINES AND 2-INDOLINONES IN ALLEVIATING MENTAL DEPRESSION

Antonio Canas-Rodriquez and Peter R. Leeming, Canterbury, England, assignors to Pfizer Inc.

No Drawing. Application Apr. 4, 1968, Ser. No. 718,943, now Patent No. 3,574,232, dated Apr. 6, 1971, which is a continuation-in-part of application Ser. No. 706,672, Feb. 19, 1968. Divided and this application Mar. 9, 1970, Ser. No. 22,734
Claims priority, application Great Britain, Feb. 21, 1967, 8,172/67
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 13 Claims

Novel 3-aminoalkyl-1-phenyl-indolines and 2-indolinones are disclosed.

The anti-depressant properties of these compounds as well as certain other 2-indolinone analogs thereof are also disclosed.

3,686,183
PREPARATION OF OPTICAL ISOMERS OF ARYLALKYLACETIC ACIDS

Norman H. Dyson, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 24, 1969, Ser. No. 809,957
Int. Cl. C07c *5/04;* C07d *43/54*
U.S. Cl. 260—284 11 Claims

Solutions of α-substituted d- or l-arylacetic acid salts of asymmetric optically active nitrogeneous bases are heated to elevated temperatures to cause racemization. By repeated crystallization and racemization steps with final conversion to the acid, a dl-acid can be converted to an optically specific d- or l-acid. The α-substituted arylacetic acids are useful as anti-inflammatory, analgesic, antipyretic and anti-pruritic agents.

3,686,184
3,4-DIHYDRO-2(1H)-ISOQUINOLINE-CARBOXAMIDOXIMES

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 727,065, May 6, 1968. This application Apr. 2, 1970, Ser. No. 25,250
Claims priority, application Great Britain, Apr. 21, 1969, 20,341/69
The portion of the term of the patent subsequent to Apr. 7, 1987, has been disclaimed
Int. Cl. C07d *35/10*
U.S. Cl. 260—288 R 17 Claims

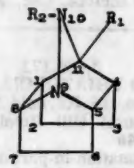
3,4 - dihydro - 2(1H) - isoquinolinecarboxamidoxime derivatives, having hypotensive activity, are prepared by reacting the corresponding 3,4-dihydro-2(1H)-isoquinolinecarbonitrile with hydroxylamine.

3,686,185
9,10-DIAZATETRACYCLO[6.3.0.0^{4,11},0^{5,9}] UNDECANE COMPOUNDS

Philip M. Weintraub and John R. Challey, Ashland, Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

No Drawing. Filed May 11, 1970, Ser. No. 36,411
Int. Cl. C07d *57/02*
U.S. Cl. 260—293.55 8 Claims

Novel 9,10 - diazatetracyclo[6.3.0.0^{4,11},0^{5,9}]undecane compounds having utility as anticoccidial agents and having the formula



wherein R_1 and R_2 are individually hydrogen, alkyl containing from 1 to 4 carbon atoms, lower alkanoyl

wherein R is lower alkyl having from 1 to 4 carbon atoms, benzyl, phenyl, or a phenyl radical substituted by at least one substituent selected from lower alkyl containing from 1 to 4 carbon atoms, lower alkoxy containing from 1 to 4 carbon atoms, carboxy, halogen or nitro, and with the proviso that the nitrogen atoms of the 9,10-diazatetracyclo[6.3.0.0^{4,11},0^{5,9}]undecane compound may be quaternized with lower alkyl radicals, are disclosed.

3,686,186
SUBSTITUTED ISOCHROMAN OR PHTHALAN PIPERIDENES

William J. Houlihan, 15 Raynold Road, Mountain Lakes, N.J. 07046, and Jeffrey Nadelson, Troy Hills Village, 1480 Rte. 46, Parsippany, N.J. 07054

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,268
Int. Cl. C07d *99/04*
U.S. Cl. 260—293.58 7 Claims

Substituted isochroman or phthalan piperidenes, e.g., 1'-benzylspiro[isochroman-3,4'-piperiden] - 1 - one, prepared by refluxing the corresponding 2-[substituted-4-hydroxy-4-piperidyl]-substituted benzylamide. The compounds are useful as hypotriglyceridemic, anti-hypertensive and antidepressant agents.

3,686,187
4-ANILINO-1-(4-p-FLUOROPHENYL-1-BUTYL) PIPERIDINE COMPOUNDS

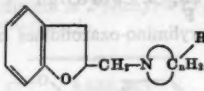
John Wayne Cole, Deerfield, and Robert Hallas, Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed May 25, 1970, Ser. No. 40,375
Int. Cl. C07d *29/28*
U.S. Cl. 260—293.79 8 Claims

A new series of piperidine derivatives has been discovered; they are compounds carrying, in the 4-position of the piperidine ring, a substituted anilino group and in the 1-position, a p-fluorophenyl ring separated from the piperidine ring by a carbon chain of 4. These new compounds and their non-toxic acid addition salts are highly effective analgesics of low toxicity.

3,686,188
N-BENZOFURYLMETHYL-ARYL-ALKYLENEIMINES
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed June 30, 1970, Ser. No. 51,366
Int. Cl. C07d *31/28, 31/48*
U.S. Cl. 260—294.8 C 3 Claims

N - (2,3 - dihydrobenzofurylmethyl) - arylalkyleneimines, e.g. those of the formula

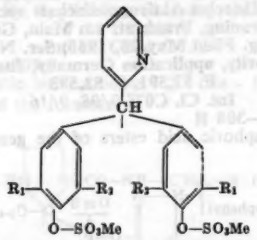


R=iso- or heterocyclic aryl radical
n=4–7

quaternaries and salts thereof exhibit hypotensive effects.

3,686,189
3-HALOGENATED 4,4'-DISULFOXY-DIPHENYL-(2-PYRIDYL)-METHANE
Gianfranco Pala, Milan, Italy, assignor to Istituto de Angeli S.p.A., Milan, Italy
No Drawing. Continuation-in-part of application Ser. No. 638,755, May 16, 1967. This application Sept. 17, 1970, Ser. No. 73,213
Claims priority, application Italy, Dec. 14, 1966, 17,936/66, 17,937/66
The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 R 6 Claims

Di-alkali salts of 4,4'-disulfoxy-diphenyl-(2-pyridyl)-methane of the general formula



wherein R_1 and R_2 are hydrogen and Me is an alkali metal cation are provided in an especially facile manner from the corresponding 4,4'-dihydroxy compound in which at least one of the couples of substituents R_1R_1 and R_2R_2 is a halogen, preferably bromine or chlorine by: (1) reacting said hydroxy compounds with an excess of chlorosulfonic acid in the presence of an acid binding agent, such as pyridine; (2) adjusting the pH with an alkaline-reacting salt-forming agent which provides an alkaline cation such as an alkali metal hydroxide, typified by sodium hydroxide; and (3) dehalogenating the compound of (2) with a Nickel-Raney alloy.

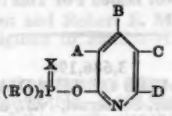
3,686,190
2-PYRIDINETHIOACETAMIDES
Charles Malen, Fresnes, Bernard Danree, St.-Germain-en-Laye, and Xavier Poscaud, Paris, France, assignors to Societe en nom collectif Science Union et Cie, Societe Francaise de Recherche Medicale, Suresnes, France
No Drawing. Original application July 2, 1969, Ser. No. 838,696. Divided and this application Aug. 7, 1970, Ser. No. 62,202
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 E 9 Claims

Ethane thioamides disubstituted in 2-position by Het and R, Het being 2 - pyridyl, 2- and 4-pyrimidyl, 2-pyrazinyl, 2- and 4- thiazolyl, which are optionally substituted, and R being lower-alkyl having up to six carbon atoms inclusive when Het is 2-pyridyl, and when Het is other than 2-pyridyl, R is then, lower-alkyl having up to six carbon atoms inclusive, hydrogen, phenyl, halophenyl, lower alkyl-phenyl or lower-alkyloxy phenyl.

These compounds possess antisecretory and ulceroprotector properties.

3,686,191
PROCESS FOR PREPARING 2-PYRIDINOL PHOSPHATES
Tatsumi Nishimura and Itsuki Okuda, Shimizu, and Masaru Kado, Yokohama, Japan, assignors to Kumiai Chemical Industries Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,062
Int. Cl. C07d *31/24, 31/26*
U.S. Cl. 260—294.8 K 13 Claims

Organic phosphates having excellent insecticidal properties and shown by the general formula



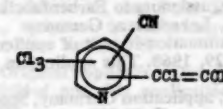
wherein R is a lower alkyl group, A, B, C and D represent hydrogen or halogen atom and X represents oxygen or sulfur atom are prepared by reacting a halogen-substituted or non-substituted pyridone-2 with a di-lower alkyl hydrogen-phosphite or a di-lower alkyl thionohydrogenphosphite in the presence of a polyhalohydrocarbon and a base.

3,686,192
SUBSTITUTED PYRIDINE DERIVATIVES
George G. I. Moore, Birchwood, Joseph Kenneth Harrington, Edina, and John F. Gerster, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,795
Int. Cl. C07d *31/48*
U.S. Cl. 260—294.8 F 11 Claims

Compounds wherein a pyridine ring and a benzene ring are linked by sulfur, oxygen, imino, carbonyl or a carbon-carbon bond and one of the rings is substituted by a haloalkylsulfonamido group. The rings are optionally substituted by lower alkyl, lower alkoxy, hydroxy and/or halogen. These compounds and their salts are active as plant growth modifying agents.

3,686,193
PERCHLORINATED VINYLCYANOPYRIDINES
Howard Johnston, 430 Las Lomas Way 94598, and Sven H. Ruetman, 55 El Camino Corto 94546, both of Walnut Creek, Calif.
No Drawing. Filed Jan. 28, 1971, Ser. No. 110,754
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 2 Claims

Compounds corresponding to the formula



with the proviso that the cyano group (—CN) is not in a position ortho to the trichlorovinyl group

(—CCl=CCl$_2$)

These compounds are prepared by vapor phase chlorination and have utility as pesticides for the control of a variety of plant, bacterial and fungal pests.

3,686,194

PROCESS FOR THE PRODUCTION OF CYANOPYRIDINES

Ferdinand Hagedorn, Cologne - Buchheim, Karlfried Wedemeyer, Cologne-Stammheim, Bernhard Scherhag, Leverkusen, and Arnold Hausweiler, Dormagen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 27, 1969, Ser. No. 837,305
Claims priority, application Germany, July 10, 1968, P 17 70 841.7
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 7 Claims

Cyanopyridines are prepared by the vapor phase reaction of an alkyl pyridine, oxygen and ammonia in the presence of a tin phosphate catalyst activated with compound of molybdenum, bismuth, vanadium, iron or cobalt.

3,686,195

Patent Not Issued For This Number

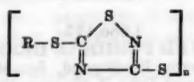
3,686,196

POLYMERS OF THIADIAZOLE

William J. Considine, Somerset, N.J., and Raymond Seltzer, New York, N.Y., assignors to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed Feb. 1, 1968, Ser. No. 702,211
Int. Cl. C08d *13/10*; C08g *33/02*
U.S. Cl. 260—302 SD 3 Claims

In accordance with certain of its aspects, this invention relates to novel compositions and to a process for preparing a polymer comprising recurring units of the formula:



in which R is selected from the group consisting of alkylene, activated arylene, aralkylene, activated alkarylene, and divalent heterocyclic groups and *n* is an integer at least 2, which comprises reacting (i) a difunctional compound of the formula:

X—R—X

in which X is a halogen radical or an ester group of a lower carboxylic acid with (ii) a stable metal perthiocyanate; and recovering said polymer.

3,686,197

Patent Not Issued For This Number

3,686,198

1,2,4-THIADIAZOLYL-UREAS

Carl Metzger and Dieter Borrmann, Wuppertal-Elberfeld, Richard Wegler, Leverkusen, Ludwig Eue, Cologne-Stammheim, and Helmuth Hack, Cologne-Buchheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 756,296, Aug. 29, 1968. This application Oct. 1, 1969, Ser. No. 862,908
Claims priority, application Germany, Sept. 19, 1967, F 53,530
Int. Cl. C07d *91/60*
U.S. Cl. 260—306.8 D 13 Claims

N-[3-(alkyl, alkylmercapto, dialkylamino and phenyl-substituted)-1,2,4-thiadiazol-5-yl] - N - [unsubstituted and alkyl-substituted]-N',N'-[mono- and di-alkyl-substituted] ureas which possess herbicidal properties, and which may be produced by conventional methods.

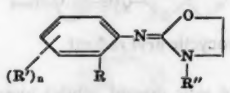
3,686,199

N-SUBSTITUTED-2-ARYLIMINO OXAZOLIDINES

Hartmund Wollweber, Rudolf Hiltmann, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 17, 1970, Ser. No. 99,227
Claims priority, application Germany, Dec. 17, 1969, P 19 63 193.7
Int. Cl. C07d *85/26*
U.S. Cl. 260—307 F 4 Claims

N-substituted-2-arylimino-oxazolidines of the formula



(I)

in which

R denotes a halogen atom, or an optionally halogen-substituted lower alkyl, alkenyl or alkoxy radical,

R' denotes a halogen atom or an alkyl, alkoxy, alkenyl or fluoromethyl radical,

R'' denotes an alkyl, alkenyl or alkynyl radical containing up to 7 carbon atoms, the alkenyl radical optionally being substituted at the double bond by 1 or 2 chlorine or bromine atoms, and

n denotes 0, 1 or 2,

and salts thereof, which possess acaricidal properties.

3,686,200

PHOSPHORIC ACID ESTERS

Otto Scherer, Bad Soden, Taunus, and Hilmar Mildenberger, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 28, 1968, Ser. No. 732,544
Claims priority, application Germany, June 3, 1967, F 52,591, F 52,593
Int. Cl. C07f *9/08, 9/16*
U.S. Cl. 260—308 R 7 Claims

Novel phosphoric acid esters of the general formula

The novel compounds are useful for the control of pests on cultured plants and animals.

3,686,201

1,2,4-TRIAZOLYL-IMINODITHIOCARBONIC ACID ESTERS

Karlfried Dickoré, Richard Wegler, and Günther Hermann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 17, 1969, Ser. No. 842,701
Claims priority, application Germany, July 19, 1968, P 17 70 920.5
Int. Cl. C07d *55/06*
U.S. Cl. 260—308 R 5 Claims

1,2,4-triazolyl-iminodithiocarbonic acid esters; i.e. N-(1,2,4-triazol-3-yl)-iminodithiocarbonic acid mono and di (same and mixed) -alkyl, alkenyl, alkynyl, alkylmercapto-alkyl and phenyl-alkyl esters; or N-(1,2,4-triazol-3-yl)-dithiocarbamic acid alkyl, alkenyl, alkynyl, alkylmercapto-alkyl and phenyl-alkyl esters and N-(1,2,4-triazol-3-yl)-iminodithiocarbonic acid di (same and mixed) -alkyl, alkenyl, alkynyl, alkylmercapto-alkyl and phenyl-alkyl esters; which possess rodent-, leporine animal- and ruminant-repellent properties, and which may be produced by conventional methods.

3,686,202

TRIAZOLYL-COUMARINS

Rudolf Kirchmayr, Binningen, Basel-Land, and Jean Rody, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 8, 1969, Ser. No. 840,037
Int. Cl. C07d *99/04*; C09k *1/02*
U.S. Cl. 260—308 A 7 Claims

Coumarins substituted in 3-position and containing 1,2,3-triazolyl-(4) in 7-position are useful optical brighteners. A specific embodiment is 2-phenyl-4-[3-phenyl-coumarinyl-(7)]-5-methyl-v-triazole.

3,686,203

NITROIMIDAZOLES

Phillip Miller Somerset, and Carroll Sherman Montgomery, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 28, 1969, Ser. No. 828,787
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 5 Claims

The preparation of 1-loweralkyl-2-(2-phenyl-2-hydroxyethyl)-5-nitroimidazoles from the corresponding 2-methylimidazole by reaction with an aldehyde in the presence of a strong base catalyst, is described. These compounds are useful as intermediates in preparing other substituted imidazoles having antibacterial and antiparasitic activity.

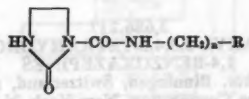
3,686,204

CYCLOALIPHATIC IMIDAZOLIDINE-2-ONE-1-CARBOXYLIC ACID AMIDES

Ferdinand Munz, Helmuth Hack, and Ludwig Eue, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 22, 1970, Ser. No. 48,473
Claims priority, application Germany, June 28, 1969, P 19 32 827.9
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 8 Claims

Cycloaliphatic imidazolidine - 2 - one - 1 - carboxylic acid amides of the formula



wherein R is an unsubstituted or substituted cycloaliphatic hydrocarbyl radical having 3 to 8 ring carbon atoms; and *n* is 0 or 1; possess herbicidal, especially outstandingly selective herbicidal, activity.

3,686,205

Patent Not Issued For This Number

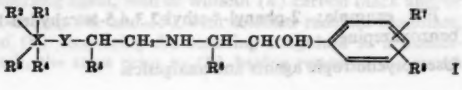
3,686,206

PYRAZOLE AND PYRAZOLONE AMINOKETONES

Klaus Posselt, Bergen Enkheim, and Kurt Thiele, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 693,138, Dec. 26, 1967. This application Mar. 13, 1970, Ser. No. 19,511
Claims priority, application Germany, Dec. 30, 1966, D 51,910, D 51,911
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R 17 Claims

Compounds of the formula



their salts and quaternary ammonium compounds, as well as their optically active isomers or diastereomers wherein R^1 to R^4 represent hydrogen, halogen, lower alkyl, aralkyl, phenyl, hydroxyl, lower alkoxy, nitro or lower carboalkoxy, R^5 and R^6 are hydrogen or methyl, R^7 and R^8 are hydrogen, halogen or lower alkoxy, X is a heterocyclic ring system, mono- or condensed bicyclic, with 1–4 hetero atoms, in which the individual rings have 5 to 6 members and can also contain 1 or more carbonyl groups, Y is —CO— or —CH(OH)—. These compounds have pharmacological activity in that they increase the coronary blood flow by simultaneously causing dilation of the coronaries and an increase in contraction strength. The pyrazoles and pyrazolones have antiphlogistic action.

3,686,207

1-HYDROXY-ISOINDOL-3-ONES

William J. Houlihan and Robert E. Manning, Mountain Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application Mar. 15, 1967, Ser. No. 623,239, now Patent No. 3,498,988, dated Mar. 3, 1970. Divided and this application Nov. 17, 1969, Ser. No. 877,451
Int. Cl. C07d *27/50*
U.S. Cl. 260—325 5 Claims

The compounds and certain intermediates are useful as central nervous system stimulants and anti-inflammatories. They are prepared by converting an isoindolo[1,2-a]isoquinoline to its quaternary ammonium salt by treatment with a lower alkyl halide, e.g. methyl iodide, and reducing the salt by sodium in liquid ammonia to cleave the bond common to the five membered ring of the isoindolo moiety and six membered ring to the isoquinolino moiety, thus forming the nine membered N-heterocyclic ring of dibenz[c,f]azonine. For example, 2,3-dimethoxy-7-methyl-5,6,7,8-tetrahydrodibenz[c,f]azonine can thus be prepared from 2,3-dimethoxy-5,6,8,12b-tetrahydroisoindolo-[1,2-a]isoquinoline.

3,686,208

Patent Not Issued For This Number

3,686,209

Patent Not Issued For This Number

3,686,210

2-ACYLAMIDO-3-ARYL-3H-INDOL-3-OL ESTERS AND RELATED COMPOUNDS

Stanley C. Bell, Narberth, and Peter H. L. Wei, Upper Darby, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Dec. 28, 1967, Ser. No. 694,089. Divided and this application Jan. 13, 1970, Ser. No. 7,304
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.13 R 2 Claims

The invention is directed to 2-acylamido-3-aryl-3H-indol-3-ol esters and their hydrolysis derivatives. The compounds have central nervous system activity as depressants or may be used as intermediates in the preparation of compounds that have such activity.

3,686,211

INDOLYLALKANOIC ACID LACTONES

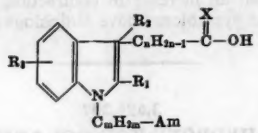
Daniel Frederick Dickel, Berkeley Heights, and George de Stevens, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 642,310, May 31, 1967. This application Mar. 2, 1970, Ser. No. 15,953

Int. Cl. C07d 27/56

U.S. Cl. 260—326.14 R 6 Claims

(1-aminoalkyl-3-indolyl)-alkanols or -alkanoic acids, e.g. those of the formula



R_1=H or alkyl

R_2=H or OH

R_3=H, alkyl, alkoxy, alkylenedioxy, alkylmercapto, halogen, CF_3, NO_2 or amino

X=H_2 or O

m, *n*=2–7

and functional derivatives thereof, increase the contractile force of the heart.

3,686,212

Patent Not Issued For This Number

3,686,213

SUBSTITUTED AMINOETHYL INDOLES

John Frank Poletto, Nanuet, N.Y., and George Rodger Allen, Jr., Old Tappan, Ruddy Littell, River Vale, and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 1,045, Jan. 6, 1970, which is a continuation-in-part of application Ser. No. 603,772, Dec. 22, 1966. This application Aug. 28, 1970, Ser. No. 68,005

Int. Cl. C07d 27/56

U.S. Cl. 260—326.15 9 Claims

This invention describes new substituted indole compounds. Intermediate 3-halodicarbonyl indoles are also described. The preparation of the final products from the 3-halodicarbonyl indoles wherein the 3-position contains a disubstituted β-aminoethyl group is described. The compounds have utility as central nervous system depressants, analgesics, anti-inflammatory agents, and diuretic agents.

3,686,214

THIOCARBAMOYL PYRROLIDINYL SULFIDES

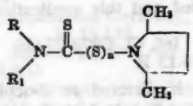
Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 8, 1970, Ser. No. 44,623

Int. Cl. C07d 27/04

U.S. Cl. 260—326.83 6 Claims

A compound of the formula



where R and R_1 independently are alkyl, cycloalkyl, aralkyl or R and R_1 together with the nitrogen atom form a heterocycle; and *n* is one or two, which is an accelerator and vulcanizing agent for the vulcanization of rubber.

3,686,215

PRODUCTION OF 5,6,7,7a-TETRAHYDRO-INDAN-5-ONES

Clive A. Henrick, Palo Alto, John A. Edwards, Los Altos, and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama

No Drawing. Filed Mar. 27, 1969, Ser. No. 811,236

Int. Cl. C07d 7/04, 13/04, 73/00

U.S. Cl. 260—327 M 7 Claims

Preparation of α,β-unsaturated carbocyclic ketones by reacting a δ-keto carboxylic acid ester, anhydride or acyl halide with a carbanion generated by treating a methylphosphonate with base. The reaction is useful for producing intermediates for synthesis of known steroids having estrogenic, progestational, or anabolic activity, for example.

3,686,216

BENZOTHIOPHENE 1,1-DIOXIDE DERIVATIVES AND METHOD OF PREPARING SAME

Douglas I. Relyea, Pompton Plains, N.J., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Filed Jan. 23, 1969, Ser. No. 793,561

Int. Cl. C07d 63/22

U.S. Cl. 260—330.5 13 Claims

Novel benzothiophene 1,1-dioxide derivatives have been found useful as fungicides and bactericides. They are prepared by reacting benzothiophene 1,1-dioxide with an appropriate organic sulfenyl chloride (RSCl) and then dehydrohalogenating the reaction product with a strongly basic reagent to produce the 2-(R thio) benzo [b] thiophene-1,1-dioxide derivatives; isomerization of these derivatives to their 3-(R thio) isomers is accomplished by heating with a strongly basic reagent; the (R thio) derivatives also can be oxidized to the sulfonyl compounds—(RSO_2).

3,686,217

2-ARYL-2,3,4,5-TETRAHYDRO-1,4-BENZOXAZEPINES

Karl Schenker, Binningen, Switzerland, assignor to Ciba Corporation, New York, N.Y.
Binningen, Switzerland

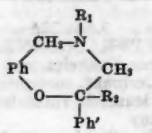
No Drawing. Continuation-in-part of application Ser. No. 487,313, Sept. 14, 1965. This application Aug. 15, 1967, Ser. No. 660,597

Claims priority, application Switzerland, Sept. 21, 1964, 12,255/64

Int. Cl. C07d 87/54

U.S. Cl. 260—333 12 Claims

New compounds of the formula



Ph=optionally substituted ortho-phenylene

Ph'=optionally substituted phenyl

R_1=optionally substituted hydrocarbon radical of aliphatic character

R_2=hydrogen or lower alkyl.

For example: 2-phenyl-4-ethyl-2,3,4,5-tetrahydro-1,4-benzoxazepine.

Use: psychotropic agents and analgesics.

3,686,218

XANTHENYL SEMICARBAZIDES

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Continuation-in-part of application Ser. No. 662,587, Aug. 23, 1967. This application Sept. 15, 1969, Ser. No. 858,183

Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Sept. 27, 1968, 46,085/68

Int. Cl. C07d *7/42*

U.S. Cl. 260—335 4 Claims

4-(9-xanthenyl)semicarbazide and thiosemicarbazide, 4-(9-thiazanthenyl)semicarbazide and thiosemicarbazide, and derivatives of these compounds, useful as anti-secretory agents.

3,686,219

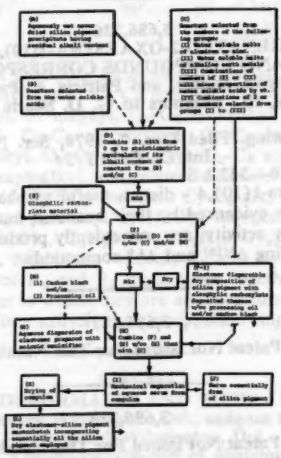
SILICA PIGMENTS AND ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,459

Int. Cl. C08c *11/10;* C08d *9/00*

U.S. Cl. 260—33.6 AO 8 Claims



Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an ealstomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried therefrom after its precipitation, with (2) a quantity of oleophilic carboxylate material, (3) combining the resulting treated wet silica pigment slurry with an aqueous dispersion of the elastomer containing an anionic dispersing agent, with or without (4) carbon black and/or processing oil, and (5) with selected reactant-coagulant, and (b) recovering the resulting coagulum as a masterbatch, the steps prior to (b) having rendered the serum of the aqueous mixture essentially free of silica pigment. Prior to combination with the elastomer dispersion the oleophilic carboxylate treated silica pigment may be recovered as a useful dispersible silica pigment product, or the wet silica pigment may be treated with water soluble salts of aluminum and/or zinc and/or alkaline earth metal and/or mineral acid, together with the oleophilic carboxylate, and after such treatment the resulting pigment composition may be recovered from the slurry with or without prior addition of processing oil to the slurry, as a useful dispersible silica pigment composition, or the so treated wet silica pigment may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.

3,686,220

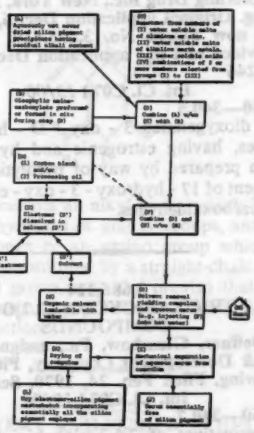
ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,471

Int. Cl. C07c *11/10;* C08d *9/00*

U.S. Cl. 260—33.6 AO 6 Claims



Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried after its precipitation, with (2) a quantity of oleophilic amine carboxylate material, (3) combining the resulting treated silica pigment slurry with a solvent dispersion of the elastomer, with or without (4) carbon black and/or processing oil and (5) selected reactant, and (b) removing the solvent and aqueous phase and recovering the resulting combination as a masterbatch essentially without loss of silica pigment. The wet pigment may be treated with water soluble salt of aluminum, or zinc, or the alkaline earth metals and/or with

water soluble acid, as well as with the said amine carboxylate, and after such treatment the resulting pigment composition may be combined as in (3), (4) and (5) above, and be recovered as in (b) above in the form of a masterbatch.

3,686,221

Patent Not Issued For This Number

3,686,222

METHYLENEDIOXY-PHENOXY DERIVATIVES

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner, Pfaffhausen, Norbert Rigassi, Arlesheim, Ulrich Schwieter, Reinach, and Milos Suchy, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,105
Claims priority, application Switzerland, Mar. 25, 1970, 4,620/70
Int. Cl. C07d *13/10*
U.S. Cl. 260—340.5 **29 Claims**

Methylenedioxy substituted benzyloxy or phenyloxy ethers of aliphatic hydrocarbons, wherein the aliphatic group contains between 6 and 11 carbon atoms. These ethers are useful in killing and preventing the proliferation of insects by upsetting their hormonal balance.

3,686,223

D-HOMOESTRATRIENES

Theodore C. Miller, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Original application Dec. 6, 1967, Ser. No. 688,318, now Patent No. 3,475,419, dated Oct. 28, 1969. Divided and this application Dec. 26, 1968, Ser. No. 787,246
Int. Cl. C07d *13/00*
U.S. Cl. 260—340.5 **9 Claims**

17,17a - dioxygenated 3 - oxy - D - homoestra - 1,3, 5(10)-trienes, having estrogenic and hypocholesteremic activity, are prepared by way of pyrolytic or Lewis acid rearrangement of 17 - hydroxy - 3 - oxy - estra - 1,3,5(10)-triene-17α-carboxaldehydes.

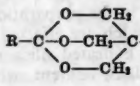
3,686,224

2,6,7-TRIOXABICYCLO[2.2.2]OCTANE COMPOUNDS

John F. Deffner, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,828
Int. Cl. C07d *19/00*
U.S. Cl. 260—340.7 **3 Claims**

Novel derivatives of 2,6,7-trioxabicyclo [2.2.2]octane useful as herbicides are represented by the general formula



wherein R can be hydrogen, alkyl, aryl, aralkyl, alkaryl, cycloalkyl and fluoromethyl radicals; and Z can be amino, acetamido, benzamido, nitrobenzamido, chlorobenzamido, alkylureido, arylureido and ammonium fluoroacetate radicals. Examples include

1-methyl-4-amino-2,6,7-trioxabicyclo[2.2.2]octane
1-trifluoromethyl-2,6,7-trioxabicyclo[2.2.2]octyl-4-ammonium trifluoroacetate
N-(N'-methylcarbamyl)-4-amino-1-methyl-2,6,7-trioxabicyclo[2.2.2]octane
1-methyl-4-benzamido-2,6,7-trioxabicyclo[2.2.2]octane
1-methyl-4-(p-nitrobenzamido)-2,6,7-trioxabicyclo [2.2.2]octane
1-methyl-4-(2',4'-dichlorobenzamido)-2,6,7-trioxabicyclo[2.2.2]octane.

3,686,225

COMPLEXES OF POLYETHER COMPOUNDS AND IONIC COMPOUNDS

Charles John Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 588,302, Oct. 21, 1966, which is a continuation-in-part of application Ser. No. 358,937, Apr. 10, 1964. This application Apr. 1, 1969, Ser. No. 812,452
Int. Cl. C07d *21/00*
U.S. Cl. 260—340.3 **13 Claims**

Complexes of ionic compounds and macrocyclic polyether "crown" compounds are prepared. The crown compounds are composed of from 1 to 4 vicinally dioxy cyclic hydrocarbons (e.g., benzene, naphthalene) or perhydro analogues thereof (e.g., cyclohexane, Decalin) joined through the vicinal oxygen atoms by diprimary alkylene groups or diprimary alkylene ether groups to form a macrocyclic ring having from 14 to 30 ring atoms, preferably 15 to 24, the oxygen atoms of the ring being separated one from the other by from 2 to 3 carbon atoms. Ionic compounds complexed are those having cations such as alkali metal ions, ions of alkali earth metals of atomic weight greater than 40, ammonium ions, Cu^+, Ag^+, Au^+, Hg^+, Hg^{++}, Tl^+, Pb^+, La^{+++}, and Ce^{+++}. The complexes make possible use of certain chemical reagents in hydrocarbon media wherein those reagents are normally insoluble.

3,686,226

17-OXYGENATED-2-OXAESTRA-1(10),4-DIEN-3-ONES AND COMPOUNDS CORRESPONDING

Raphael Pappo, Skokie, and Patricia A. Prekel, Rolling Meadows, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,969
Int. Cl. C07d *7/24*
U.S. Cl. 260—343.2 S **9 Claims**

2-oxaestra-1(10),4 - dienes, useful as pharmacological agents as is evidenced by their anabolic, androgenic, and anti-fertility activity, are conveniently produced from the corresponding $\Delta^{5(10)}$ and $\Delta^{4,9}$ compounds.

3,686,227

Patent Not Issued For This Number

3,686,228

Patent Not Issued For This Number

3,686,229

PRODUCTION OF PHTHALIC ANHYDRIDE

Guenter Poehler, Hubert Suter, Friedrich Wirth, and Johann Heinrich Walter, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 2, 1968, Ser. No. 780,607
Claims priority, application Germany, Dec. 1, 1967, P 16 43 703.9
Int. Cl. C07c *63/02*
U.S. Cl. 260—346.4 **4 Claims**

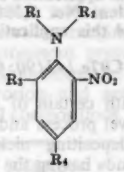
Continuous production of pure phthalic anhydride by air oxidation of o-xylene with certain fixed-bed supported catalysts containing vanadium pentoxide and titanium dioxide in a specific tubular reactor and by sublimation, thermal treatment and continuous distillation under specific conditions.

3,686,230
HERBICIDAL N-TETRAHYDROFURFURYL SUBSTITUTED 2,6-DINITROANILINES

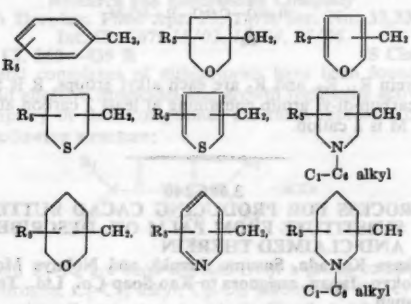
Lester L. Maravetz, Westfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Feb. 24, 1970, Ser. No. 18,407
Int. Cl. C07f 5/04
U.S. Cl. 260—347.7 10 Claims

The herbicidal compounds of the subject invention are represented by the following generic formula



wherein R_1 is selected from the group consisting of



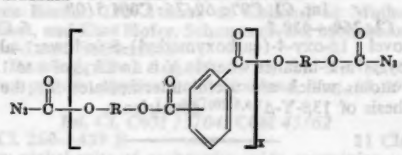
wherein R_5 is H; C_1–C_6 alkyl, alkenyl, haloalkyl, halogen, NO_2; R_2 is hydrogen, C_1–C_6 straight or branched chain alkyl, alkenyl, or alkynyl, C_3–C_8 cycloalkyl, C_4–C_{10} cycloalkylalkyl, C_1–C_6 alkoxyalkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 haloalkyl, C_1–C_6 cyanoalkyl, C_2–C_6 acylalkyl, C_1–C_6 alkylmercaptoalkyl, and related sulfoxide and sulfone analogs; R_3 is H, NO_2, halogen, C_1–C_6 alkyl; and R_4 is H, C_1–C_6 alkyl, haloalkyl, cycloalkyl, halogen, CF_3, NO_2, $C{\equiv}N$, $CH_3S(O)_x$, $C_2H_5S(O)_x$, $C_3H_7S(O)_x$, wherein x is 0, 1 or 2, $SO_2NR_6R_7$ wherein R_6 and R_7 can be the same as R_2 or R_6 and R_7 when taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, aziridino, or morpholino ring.

3,686,231
AZIDOFORMATES AND THEIR USE

James N. Haynes, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 887,382, Dec. 22, 1969. This application Nov. 27, 1970, Ser. No. 93,399
Int. Cl. C07c 117/00
U.S. Cl. 260—349 5 Claims

Disclosed are the azidoformates of omega-hydroxyalkyl phthalates, their related low molecular weight condensation polymers and their mixtures represented by the general formula



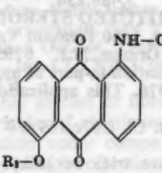
where R is an alkylene radical containing 2 to 10 carbon atoms and x is an integer of from about 1 to about 10. Also disclosed is a process of improving the adhesion of polyester material to various other materials using the azidoformate compounds. In particular, there is disclosed a process of improving the adhesion of polyester tire cord to rubber tire stock using the said azidoformate compounds.

3,686,232
ANTHRAQUINONES

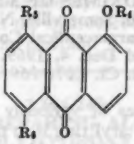
Walter Hohmann and Klaus Wunderlich, Leverkusen, and Hans-Samuel Bien, Burscheid, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 24, 1970, Ser. No. 49,526
Claims priority, application Germany, June 27, 1969, P 19 32 646.6; Mar. 23, 1970, P 20 13 789.7, P 20 13 790.0
Int. Cl. C09b 1/54
U.S. Cl. 260—379 1 Claim

Compounds of formula



wherein R_1 and R_2 independently of one another denote optionally substituted alkyl radicals with 1–3 C atoms and R_3 represents hydrogen or an optionally substituted alkyl radical with 1–5 C atoms, as well as compounds of the formula



wherein R_4 represents an alkyl group which is optionally substituted by hydroxyl or alkoxy groups, and R_5 and R_6 represent hydrogen or an amino group which is monosubstituted or disubstituted by a straight-chain alkyl group or a cycloalkyl group, with the proviso that R_5 and R_6 do not simultaneously represent hydrogen, and processes for their production.

3,686,233
RECOVERY AND PURIFICATION OF METHYL VIOLET DYES

John Edson Gordon, Martinsville, and Martin Louis Feldman, East Brunswick, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 20, 1970, Ser. No. 4,414
Int. Cl. C09b 11/14
U.S. Cl. 260—391 7 Claims

Methyl Violet dye (C.I. 42,535) is obtained in a purified or concentrated condition from its aqueous dispersions by adding sufficient alkali to precipitate the dye base, the precipitation being carried out in the presence of a water-immiscible nonpolar solvent for the dye base in which the salt form of the dye is insoluble, followed by separating the resulting base solution and acidifying it to recover the Methyl Violet dye.

3,686,234
Patent Not Issued For This Number

3,686,235

CLASS OF LIQUID CRYSTALS

Harold J. Nicholas, 12456 Merrick Drive, Creve Coeur, Mo. 63141, and Furn F. Knapp, Jr., 6700 Torlina Drive, Berkeley, Mo. 63134

No Drawing. Filed Oct. 14, 1969, Ser. No. 866,389

Int. Cl. C07c *169/60*

U.S. Cl. 260—397.2 **12 Claims**

The chemical synthesis and isolation from natural sources of a new class of cholesteric and smectic liquid crystals are described. These consist of various fatty acid esters of tetracyclic tritertenes including members of the class of 9,19-cyclopropane triterpenes. These triterpenes include 9,19 - cyclolanost - 24 - en - 3β - ol (cycloartenol), 4a,14a,24ξ - trimethyl - 9,19 - cyclocholestan - 3β - ol, 24ξ - methyl - 9,19 - cyclolanostan - 3β - ol (24ξ - methyl cycloartanol) and 24-dihydro lanosterol and all chemically related products.

3,686,236

SUBSTITUTED STEROIDS

Sandor Barcza, 1480 Pleasant Valley Way, West Orange, N.J. 07052

No Drawing. Continuation-in-part of application Ser. No. 2,442, Jan. 12, 1970. This application Oct. 26, 1970, Ser. No. 84,255

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.5 **10 Claims**

The compounds are tri(lower)alkyl silylmethylethers of hydroxy-substituted steroids, e.g. 3-trimethylsilylmethyl ether of 17alpha - ethynylestra-1,3,5(10)-triene-3,17beta-diol. Said compounds are useful as estrogenic agents.

3,686,237

O-(NITROARYL)OXIMES OF 3-KETO STEROIDS

Allen F. Hirsch, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation

No Drawing. Filed Dec. 4, 1969, Ser. No. 882,286

Int. Cl. C07c *169/22*

U.S. Cl. 260—397.3 **21 Claims**

O-(nitroaryl)oximes of variously substituted 3 - keto steroids in which the aryl ring is in turn substituted in the ortho and/or para position with nitro groups are antilittering, anabolic and androgenic agents.

3,686,238

GLYCEROL ESTERIFIED WITH 2-NAPHTHYL-ACETIC ACIDS AND FATTY ACIDS

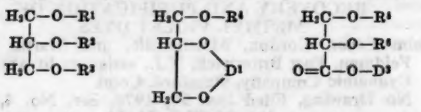
Alejandro Zaffaroni, Atherton, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Filed Jan. 19, 1970, Ser. No. 4,060

Int. Cl. A61k *27/00*; C07c *65/14, 69/76*

U.S. Cl. 260—399 **10 Claims**

Drug lipid conjugates represented by the formulas



In the formulas, R^1, R^2 and R^3 each is hydrogen, fatty acyl

or —D^4, wherein D^3 and D^4 are remainders of drug moieties, and one of said R^1, R^2 and R^3 is

or —D^4 and at least one other of said R^1, R^2 and R^3 is fatty acyl; R^4 is hydrogen or fatty acyl; R^5 and R^6 each is hydrogen or fatty acyl, and at least one of said R^5 and R^6 is fatty acyl; and D^1 and D^2 are remainders of drug moieties.

These vompounds exhibit the pharmaceutical utilities of the parent drugs but have enhanced and prolonged activity when orally administered.

3,686,239

PROCESS FOR THE PREPARATION OF SULFOHYDROCARBON-DI-YL NEOCARBOXYLATES

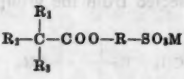
Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Original application June 29, 1965, Ser. No. 468,149, now Patent No. 3,390,062, dated June 25, 1968. Divided and this application Jan. 30, 1968, Ser. No. 723,965

Int. Cl. C07c *143/90*; C11d *1/28*

U.S. Cl. 260—400 **3 Claims**

In accordance with certain of its aspects, this invention relates to a novel process and to novel compositions useful for electrodepositing nickel, said compositions comprising compounds having the formula:



wherein R_1, R_2, and R_3 are each alkyl groups, R is a hydrocarbon-di-yl group containing at least 2 carbon atoms, and M is a cation.

3,686,240

PROCESS FOR PRODUCING CACAO BUTTER SUBSTITUTE FROM PALM OIL DESCRIBED AND CLAIMED THEREIN

Tsukasa Kawada, Susumu Suzuki, and Nobuya Matsui, Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1969, Ser. No. 879,306

Claims priority, application Japan, Nov. 26, 1968, 43/86,534

Int. Cl. C11c *3/12*

U.S. Cl. 260—409 **2 Claims**

A process for preparing a cacao butter substitute in which palm oil is cooled to a first temperature to crystallize a high melting point fraction which is then filtered off. Then the remainder of the palm oil is cooled to a second temperature lower than the first temperature to crystallize a middle melting point fraction which is then filtered off. The middle melting point fraction is then hydrogenated under conditions which minimize the formation of trans-acids, whereby to obtain the cacao butter substitute from the middle melting point fraction.

3,686,241

SUBSTITUTED HYDROINDANYL ALKANOIC ACIDS

Gaston Amiard, Thorigny, Gerard Nomine, Noisy-le-Sec, and Vesperto Torelli, Maisons-Alfort, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Original application July 27, 1966, Ser. No. 569,792, now Patent No. 3,449,382, dated June 10, 1969. Divided and this application Feb. 3, 1969, Ser. No. 796,198

Claims priority, application France, Nov. 29, 1963, 955,529

Int. Cl. C07c *69/76*; C09f *5/08*

U.S. Cl. 260—410.5 **6 Claims**

Novel 1β-oxy-4-(carboxymethyl)-5-(p-lower alkoxyphenyl)-7a-Y-indanes wherein Y is an alkyl of 1 to 18 carbon atoms which are useful intermediates for the total synthesis of 13β-Y-$\Delta^{1,3,5(10)}$-gonatrienes.

3,686,242

Patent Not Issued For This Number

3,686,243

PROCESS FOR PREPARATION OF ZINC DIALKYL DITHIOPHOSPHATES

Orville W. Rigdon, Groves, Robert S. Edwards, Nederland, and William J. Powers III, Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 12, 1970, Ser. No. 89,011
Int. Cl. C07f 3/06
U.S. Cl. 260—429.9 5 Claims

A process for preparation of zinc dialkyl dithiophosphates which comprises reacting, in a closed system, dialkyldithiophosphoric acids with a basic zinc salt in a heptane slurry at temperatures ranging from about 180°–300° F. and under autogenous pressure conditions, the resulting zinc dialkyldithiophosphates serving as antioxidants and as anticorrosion and antiwear agents in a variety of lubricating oil compositions.

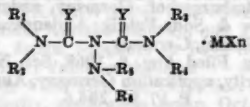
3,686,244

METAL COMPLEXES OF DITHIOBIURETS

Alfred F. Marks, Trenton, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,337
Int. Cl. C07f 15/02, 15/04, 15/06
U.S. Cl. 260—439 R 5 Claims

Metal complexes of dithiobiurets have been found to exhibit effective fungicidal and growth regulating activity. Exemplary of such compounds are those represented by the following structure:



wherein R_1–R_6 are each selected from a group consisting of hydrogen, C_1–C_{10} alkyl, C_2–C_{10} alkenyl, C_3–C_{10} cycloalkyl optionally substituted with C_1–C_6 alkyl chloro, bromo, C_6–C_{10} aryl, optionally substituted with C_1–C_6 alkyl, chloro, bromo, C_7–C_{10} arylalkyl, C_7–C_{10} alkaryl.

R_1 and R_6 and/or R_3 and R_4 and/or R_5 and R_6 together can be a carbocyclic ring containing one or more heteroatoms such as N or S; M is one selected from the group consisting of zinc, iron, nickel, copper, manganese and cobalt; X is an anion being one selected from the group consisting of chloride, bromide, iodide, sulfate, nitrate, phosphate and acetate; *n* is an integer determined by the valence of the metal atoms, and Y is either O or S.

3,686,245

HALO(HALOORGANO)BIS(TRIORGANOPHOSPHINE)NICKEL(II) COMPLEXES FOR OLEFIN DIMERIZATION

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 29, 1970, Ser. No. 50,958
Int. Cl. C07f 15/04
U.S. Cl. 260—439 R 3 Claims

Nickel complex compositions consisting of halo(haloorgano)bis(triorganophosphine)nickel(II) which are suitable as olefin dimerization catalysts when in the presence of an activating cocatalyst.

3,686,246

NICKEL COMPOUNDS

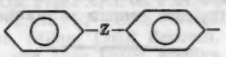
Evelyne Burdet, 193 Avenue de Colmar, 68 Mulhouse, France, and Kurt Hofer, Schonaustr. 24, Munchenstein, Basel-Land, Switzerland

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,659
Claims priority, application Switzerland, Aug. 18, 1969, 12,457/69
Int. Cl. C07f 15/04; C08f 45/62
U.S. Cl. 260—439 R 11 Claims

New nickel salts of carboxylic acids, containing a thio ether radical, of the formula

$$[R—S—(CH_2)_p—COO]_2Ni \quad (I)$$

where R stands for an alkyl, monoalkylaryl or polyalkylaryl radical which has 4 to 24 carbon atoms, may be interrupted by sulphur atoms and may bear non-water-solubilizing substituents, or for a radical, which may be alkylated, of formula



in which Z is oxygen, sulphur or the single linkage, and *p* stands for 1 or 2.

3,686,247

Patent Not Issued For This Number

3,686,248

PROCESS FOR PRODUCING SODIUM, LITHIUM OR POTASSIUM DIHYDROCARBON DIHYDRIDES OF ALUMINUM

Gunner E. Nelson, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,359
Int. Cl. C07f 5/06
U.S. Cl. 260—448 A 27 Claims

It is disclosed that sodium or lithium or potassium dihydrocarbon dihydrides of aluminum can be prepared by an improved reaction under comparatively mild conditions between a hydrocarbo aluminum compound having from 2 to about 30 carbon atoms per hydrocarbon radical with sodium or lithium or potassium metal, and hydrogen in the presence of aluminum catalyst, at a pressure from about 200 to about 2000 lbs. p.s.i.g. and at a temperature from about 100° C. to about 200° C., preferably in the presence of a solvent for the product. The hydrocarbon constituency of the product is substantially the same as the hydrocarbo constituency of the hydrocarbo aluminum reactant.

3,686,249

METHOD OF PREPARING ALUMINUM COMPLEXES OF POLYHYDROXY COMPOUNDS

Ludwig A. Hartmann, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed Apr. 24, 1970, Ser. No. 31,749
Int. Cl. C07f 5/06
U.S. Cl. 260—448 AD 9 Claims

Aluminum complexes of polyhydroxy compounds are prepared by reacting an aluminum alkoxide with a polyhydroxy compound such as sorbitol in the presence of a minimum amount of water followed by drying and stripping under less than about 1 mm. Hg.

3,686,250

PROCESS FOR PRODUCING HIGH PURITY STRAIGHT CHAIN ALUMINUM ALKYL COMPOUNDS FROM OLEFIN MIXTURES CONTAINING VINYL OLEFINS AND NON-VINYL OLEFINS

Carroll W. Lanier, Baker, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,062
Int. Cl. C07f 5/06
U.S. Cl. 260—448 A 20 Claims

It is disclosed that the production of first hydrocarbo aluminums in which the hydrocarbon radicals thereof have from about 4 to about 30 carbon atoms each and in which the hydrocarbon radicals are linked to aluminum via a terminal carbon atom involving a reaction of alpha olefins with second hydrocarbo aluminums and where the alpha olefins supplied contain at least a detectable percentage of proximately branched alpha olefins, is improved by subjecting the alpha olefins supplied to the process to a selective catalytic isomerization whereby the proximately branched alpha olefins are substantially

selectively converted to tri-substituted ethylenes, and then subjecting the olefins from the isomerization to a selective reaction with the second hydrocarbo aluminums whereby remaining alpha olefins add to aluminum-hydrogen bonds to form first hydrocarbo aluminums and the tri-substituted ethylenes remain substantially unreacted.

3,686,251

Patent Not Issued For This Number

3,686,252

PREPARATION OF ORGANOSILICON COMPOUNDS WITH SILYLPHENYL GROUPS

André Bazouin, Luzinay, and Marcel Lefort, Caluire, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,145
Claims priority, application France, Aug. 8, 1969, 6927361
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 P **5 Claims**

Organosilicon compounds, useful in the production of oils, elastomers, rubbers and polysiloxane resins, of formula

$$[Ar(R'_nSiCl_{3-n})_q]_pY$$

where Ar is aromatic radical, R' is hydrocarbyl, *n* and *q* are 1, 2 or 3 and Y is a valency bond or a p-valent radical, *p* is 1, 2 or more, are obtained by reacting $[Ar(SiR_3)_q]_pY$ with R'_nSiCl_{4-n}, R=alkyl, in the presence of aluminum chloride.

3,686,253

LINEAR 1,3,3,7 - TETRACHLOROHEXAMETHYLTETRASILOXANE AND THE PRODUCTION THEREOF

Everett W. Bennett, Longmeadow, Mass., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Original application Dec. 27, 1968, Ser. No. 787,544, now Patent No. 3,642,851. Divided and this application Apr. 2, 1971, Ser. No. 130,843
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 R **2 Claims**

Linear 1,3,3,7-tetrachlorohexamethyltetrasiloxane and a process for preparing same which comprises heating linear 1,1,1,7 - tetrachlorohexamethyltetrasiloxane at about 90° C. The novel compound is useful to form heat curable silicone resins or elastomers.

3,686,254

SILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS

Edward L. Morehouse, New City, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 24, 1969, Ser. No. 888,067
Int. Cl. C07f
U.S. Cl. 260—448.7 B **7 Claims**

This invention relates to the use of modified siloxane-polyoxyalkylene block copolymer foam stabilizers in the production of open-cell flexible polyether polyurethane foam having reduced flammability. The block copolymers are modified with certain silicon-bonded organic groups (e.g., $C_6H_5CH_2CH_2$— or bicycloheptyl groups) which increase the bulk surface tension of the block copolymers.

Open-cell flexible polyether polyurethane foams are produced commercially from reaction mixtures containing polyurethane-forming reactants, a catalyst for the reaction of the polyurethane-forming reactants to produce the polyurethane, a blowing agent and a siloxane-polyoxyalkylene block copolymer foam stabilizer. Such foams are, to some extent, flammable and are used in applications (e.g., automobile seat cushions and household furniture cushions) where fire creates a hazard. Accordingly, it is desirable to reduce the flammability of such foams.

3,686,255

CERTAIN SUBSTITUTED CYCLOHEXYL ISOCYANATES AND THIOISOCYANATES

Richard N. Knowles, P.O. Box 302, R.D. 1, Mill Creek Road, Hockessin, Del. 19707

No Drawing. Application Apr. 20, 1967, Ser. No. 635,307, which is a continuation-in-part of application Ser. No. 574,499, Aug. 18, 1966. Divided and this application Nov. 13, 1968, Ser. No. 775,563
Int. Cl. C07c *119/00, 119/04*
U.S. Cl. 260—453 A **11 Claims**

Intermediate compounds of the formula:

wherein

A is oxygen or sulfur,

R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl or tricycloalkyl.

Typical is 4 - cyclohexylmethylcyclohexylisothiocyanate useful as an intermediate to make animal repellant compounds.

3,686,256

SUBSTITUTED 2-HALO-3-THIOCYANATO-ACRYLATES

Karl Ludwig Hock, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,695
Claims priority, application Germany, Aug. 16, 1968, P 17 93 204.6
Int. Cl. C07c *161/02*
U.S. Cl. 260—454 **6 Claims**

New and valuable substituted 2-halo-3-thiocyanato-acrylates and a process for controlling fungi with these compounds.

3,686,257

DITHIOCARBONIC ACID O-ETHYL-S-2-[2(p-CHLOROPHENYLMERCAPTO) - 3 - CHLOROPROPYL] ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, and Gunther Hermann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 26, 1970, Ser. No. 40,735
Claims priority, application Germany, May 30, 1969, P 19 27 640.5
Int. Cl. C07c *154/02*
U.S. Cl. 260—455 B **1 Claim**

Dithiocarbonic acid O-ethyl-S-[2 - (p-chlorophenylmercapto)-chloropropyl] ester which possess rodent-, leporine animal- and ruminant- repellent properties, and which may be produced by conventional methods.

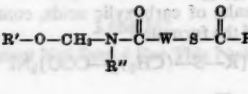
3,686,258

THIOALKANOATE CHEMICAL INTERMEDIATES

Andrew Oroslan, Forest Hills, N.Y., Stephen B. Sello, Cedar Grove, N.J., and Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

No Drawing. Application Sept. 5, 1967, Ser. No. 665,289, now Patent No. 3,485,815, which is a continuation-in-part of application Ser. No. 347,365, Feb. 26, 1964. Divided and this application Oct. 22, 1969, Ser. No. 871,199
Int. Cl. C07c *153/07*
U.S. Cl. 260—455 R **2 Claims**

Compounds of the formula



wherein R′ and R″ are hydrogen or lower alkyl, W is an alkylene linking group which may contain a hydroxyl or ether group and R‴ is a hydrocarbyl group of 1–10 carbon atoms, are useful as intermediates in forming cellulosic polymer modifiers.

3,686,259

Patent Not Issued For This Number

3,686,260

METHOD FOR PRODUCING AN ALICYCLIC DINITRILE

Goro Inoue, Tokyo, and Hirokazu Fukumi, Saitama-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kitaku, Osaka, Japan

No Drawing. Filed Sept. 2, 1969, Ser. No. 855,077
Claims priority, application Japan, Sept. 2, 1968, 43/62,347
Int. Cl. C07c *121/46*
U.S. Cl. 260—464 **12 Claims**

Method for producing cyclohexane-1,2-dicarbonitrile from cyclohexene-1-carbonitrile and hydrocyanic acid at a temperature ranging from 120° C. to 200° C. in the presence of an inorganic base, as a catalyser.

3,686,261

PROCESS FOR RECOVERING ACRYLONITRILE IN CHLOROPRENE MONOMER

Toshio Sakomura, Akihiko Shimizu, and Tadahiro Mori, Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

No Drawing. Filed Oct. 28, 1970, Ser. No. 84,950
Claims priority, application Japan, Oct. 28, 1969, 44/86,190
Int. Cl. C07c *121/32*
U.S. Cl. 260—465.9 **4 Claims**

A process for recovering by extraction of the acrylonitrile contained in the recovered monomer after copolymerization of chloroprene containing acrylonitrile by employing a concentrated aqueous solution of zinc chloride as extraction agent is disclosed.

3,686,262

PREPARATION OF (2-CYANOETHYL) KETONES

Siemen H. Groen and Johannes J. M. Deumens, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Sept. 15, 1970, Ser. No. 72,494
Claims priority, application Netherlands, Sept. 26, 1969, 6914590
Int. Cl. C07c *121/02, 121/34*
U.S. Cl. 260—465.1 **5 Claims**

A process for the preparation of (2-cyanoethyl) ketones by the hydrolysis of the corresponding (2-cyanoethyl)-N-substituted ketoimine with the subsequent recovery of a primary amine, the primary amine boiling at a lower temperature than water and/or forming with water an azeotrope boiling at a lower temperature than water and carrying on its nitrogen atom the same group as that of the nitrogen atom of the corresponding ketoimine is disclosed. When the resulting ketone is 5-cyanopentanone-2 this may be used as a starting product for the preparation of α-pipecoline.

3,686,263

REMOVAL OF OXAZOLE BY METAL COMPLEX FORMATION

Robert L. Maute, Texas City, Tex., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,807
Int. Cl. C07c *121/32*
U.S. Cl. 260—465.3 **6 Claims**

Oxazole is removed from acrylonitrile by complexing the oxazole with certain metal salts. Polymers made from acrylonitrile substantially free of oxazole have a desirably low level of color.

3,686,264

PROCESS FOR PREPARING PREDOMINANTLY LINEAR PENTENE NITRILES

Pietro Albanese, Milan, Luigi Benzoni, Novara, Benedetto Corain, and Aldo Turco, Padova, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Feb. 27, 1970, Ser. No. 15,253
Claims priority, application Italy, Mar. 3, 1969, 13,592/69
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.3 **6 Claims**

Unsaturated nitriles are synthesized from butadiene and hydrocyanic acid in the presence of phosphinic complexes of nickel which act as catalysts for the synthesis. The unsaturated nitriles are obtained in good yield, under mild conditions, and without the formation of polymers.

3,686,265

AMMONOXIDATION OF OLEFINS

Philippe Reulet, Mourenx, and Alain Pfister and Jacques Tellier, Pau, France, and Jean Blanc, Holte, and Kirsten Borre Jorgensen and Hans Bohlbro, Lingby, Denmark, assignors to Societe Nationale des Petroles d'Aquitaine Tour, Courbevoie, France

No Drawing. Filed Jan. 21, 1969, Ser. No. 792,751
Claims priority, application France, Jan. 22, 1968, 136,842
Int. Cl. C07c *121/02, 121/32*
U.S. Cl. 260—465.3 **9 Claims**

A new and improved procedure is provided for producing unsaturated nitrils and particularly, acrylonitrile, by a process involving contacting, at a temperature between 300° and 600° C., for a period of time of 0.15 to 15 seconds, a mixture of ammonia, oxygen and an olefin such as a lower alkene and particularly, propylene, with a catalyst containing as the active material, silicomolybdic acid and recovering the desired nitrile product thus formed.

3,686,266

ESTERS OF SUBSTITUTED PHENOXYPHTHALIC ACIDS

Heinz Gilch, Krefeld, and Hermann Schnell, Krefeld-Urdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 18, 1968, Ser. No. 745,707
Claims priority, application Germany, July 26, 1967, F 53,060
Int. Cl. C07c *121/66*
U.S. Cl. 260—465 D **2 Claims**

Esters of phenoxyphthalic acid are obtained when alkali metal salts or alkaline earth metal salts of hydroxyphthalic acid esters are reacted in a polar organic solvent, at temperatures of between 50 and 200° C., with derivatives of benzene which are both halogenated and substituted by electrophilic radicals. The end products prepared in this way may be used as molluscicides. The dimethyl ester of 4′-nitro-4-phenoxy-phthalic acid is particularly suitable for this purpose. Moreover, the product of this invention can be used as plasticizers for polyvinylchloride and similar plastics.

3,686,267

AMMOXIDATION OF SATURATED HYDROCARBONS

Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 17, 1969, Ser. No. 377,466
Int. Cl. C07c *121/02, 121/32*
U.S. Cl. 260—465.3 **5 Claims**

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing sulfur or a sulfur containing compound and a metal oxide.

3,686,268

PROCESS OF MANUFACTURE OF ACRYLIC AND METHACRYLIC HIGHER ESTERS

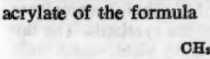
Raymond Jobert, and Bernard Vuchner, Saint-Avold, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,845

Int. Cl. B01j 9/04; C07c 69/54

U.S. Cl. 260—465.4 12 Claims

Process for the manufacture of acrylic and methacrylic higher esters of maximum purity with high yields without the formation of undesirable by-products diminishing the yields or polluting the intermediate reaction products by transesterification of an alcohol with an acrylate or methacrylate of the formula



in which X is a hydrogen atom or a methyl group and R is an alkyl group containing less carbon atoms than the alcohol, in the presence of a titanium phenoxide catalyst and drawing off the alcohol formed by azeotropic distillation with the light or lower ester.

3,686,269

PROCESS FOR THE HYDRODIMERIZATION OF ACRYLIC ACID DERIVATIVES

Yael Arad and Moshe Levy, Tel Aviv, and David Vofsi, Rehovoth, Israel, assignors to UCB (Union Chimique-Chemische Bedrijven) S.A., Drogenbos, Belgium

No Drawing. Continuation of application Ser. No. 702,821, Feb. 5, 1968. This application Aug. 27, 1970, Ser. No. 67,605

Claims priority, application Israel, Feb. 8, 1967, 27,411

Int. Cl. C07c 121/26

U.S. Cl. 260—465.8 A 6 Claims

In the hydrodimerization of acrylonitrile and lower alkyl-substituted acrylontriles by contacting the nitriles with an alkali metal amalgam for obtaining the respective adiponitriles, the improvement of using in the reaction a solvent medium which is at least partly water-miscible and dissolves both the starting compounds and the hydrodimers, the amounts of the reactants being of the acrylic acid derivatives 5–20% by weight, of water 5–30% by weight, and of a free quaternary ammonium bas 0.001–5% by weight, the degree of alkalinity being that generated by the reaction. Together with the metntioned adiponitriles, alkali metal hydroxide is recovered as byproduct.

3,686,270

PROCESS FOR THE HYDRODIMERIZATION OF ACRYLIC ACID DERIVATIVES

Yael Arad, Tel Aviv, and Moshe Levy and David Vofsi, Rehovoth, Israel, assignors to UCB (Union Chimique-Chemische Bedrijven) S.A., Saint-Gilles-lez-Brussels, Belgium

No Drawing. Continuation of abandoned application Ser. No. 711,853, Mar. 11, 1968. This application Nov. 9, 1970, Ser. No. 88,228

Claims priority, application Israel, Nov. 16, 1967, 28,953

Int. Cl. C07c 121/26

U.S. Cl. 260—465.8 A 4 Claims

In a process for the hydrodimerization of acrylonitrile to produce adiponitrile by contacting acrylonitrile with an alkali metal amalgam, the improvement which comprises carrying out said hydrodimerization in a medium consisting essentially of adiponitrile or propionitrile, the amounts used being 5 to 30% by weight of acrylonitrile, 5 to 50% by weight of water, and 0.001 to 5% by weight of a free quaternary ammonium base, the degree of alkalinity being at least that generated by the decomposition of the amalgam in the course of the reaction, thereby recovering alkali metal hydroxide and said adiponitrile.

3,686,271

NOVEL NORMOLIPEMIANT AGENTS

Louis Lefon, Paris, France, assignor to Société anonyme dite, Orsymonde, Paris, France

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,732

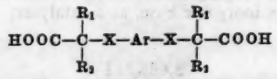
Claims priority, application Great Britain, Aug. 8, 1969, 39,893/69

Int. Cl. C07c 101/44

U.S. Cl. 260—471 R 4 Claims

Novel normolipemiant agents.

They are constituted by compounds of the formula:



(I)

in which X is O or NH, Ar is a monocyclic or bicyclic arylene radical, such as phenylene, biphenylene or naphthylene, R_1 is a hydrogen atom or an alkyl radical having 1 or 2 carbon atoms and R_2 is an alkyl radical having 1 or 2 carbon atoms and also the ester, amide and nitrile derivatives of such compounds and the non-toxic salts.

3,686,272

Patent Not Issued For This Number

3,686,273

Patent Not Issued For This Number

3,686,274

PROCESS FOR PREPARING ESTERS

Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,243

Int. Cl. C07c 69/34, 69/80

U.S. Cl. 260—475 R 14 Claims

A process for producing esters which involve reacting a dibasic organic acid with an organic halide in added water containing a basic salt of a sulfonic acid having from 12 to 20 carbon atoms.

3,686,275

PROCESS FOR PREPARING ESTERS

Russell G. Hay, Gibsonia, and John G. McNulty and William L. Walsh, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,244

Int. Cl. C07c 69/34, 69/80

U.S. Cl. 260—475 R 17 Claims

A process for preparing esters which involves reacting a dibasic organic acid with an organic halide in added water containing a sulfonic acid having from 12 to 20 carbon atoms.

3,686,276

PURIFICATION PROCESS FOR DIMETHYL TEREPHTHALATE

Robert Donald Slockett, Woodbury Heights, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 2, 1969, Ser. No. 829,806
Int. Cl. C07c 69/82
U.S. Cl. 260—475 B 11 Claims

Crude dimethyl terephthalate is purified by crystallizing dimethyl terephthalate from a solution of the crude dimethyl terephthalate in methyl p-toluate followed by separating the dimethyl terephthalate from the methyl p-toluate solution.

3,686,277

Patent Not Issued For This Number

3,686,278

Patent Not Issued For This Number

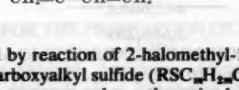
3,686,279

2-METHYLENE-3-BUTENYL SULFONIUM SALTS USEFUL AS MONOMERS

Giffin D. Jones, 4002 Cambridge; Gerald R. Geyer, 1424 Airfield Lane, both of Midland, Mich., and Melvin J. Hatch, 1217 Apache Dr., Socorro, N. Mex.

Division of Ser. No. 709,522, Dec. 28, 1967, Pat. No. 3,494,965, which is a division of Ser. No. 381,546, July 9, 1964, abandoned. This application Aug. 27, 1969, Ser. No. 853,538
Int. Cl. C07c 143/12
U.S. Cl. 260—481 R 4 Claims

New cationic sulfonium monomers of the Formula



are prepared by reaction of 2-halomethyl-1,3-butadiene with an organic carboxyalkyl sulfide ($RSC_mH_{2m}COOQ$). These sulfonium monomers can be polymerized to form cationic polymers useful in paper coatings.

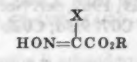
3,686,280

PROCESS OF PREPARING ALIPHATIC MONOFUNCTIONAL OXIMES

Terence W. Rave, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 29, 1970, Ser. No. 85,299
Int. Cl. C07c 131/00
U.S. Cl. 260—482 R 8 Claims

Disclosed is a novel process for the preparation of oximes and hydroximoyl halides, comprising reacting nitrosyl chloride with ketene in an essentially 1:1 molar ratio at a temperature below about 50° C. and then adding water or an aliphatic alcohol in excess of that required to convert the intermediate to an oxime having the general formula $HON=CHCO_2R$ where R is hydrogen or an aliphatic radical. The oxime can be treated with a halogen to prepare a hydroximoyl halide having the general formula



where R is as defined above and X is chlorine, bromine or iodine.

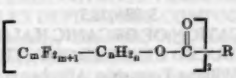
3,686,281

PREPARATION OF POLYFLUOROALKYL ESTERS OF FUMARIC AND RELATED ACIDS

Martin Knell, 4 Possum Rd., Ossining, N.Y., and Edward Berger, 698 Yonkers ave., 1

Filed June 2, 1969, Ser. No. 829,764
Int. Cl. C07c 69/52, 69/60
U.S. Cl. 260—485 F 21 Claims

a process for the preparation of ester compounds of the formula:



wherein *m* is an integer of 3 to 18; *n* is an integer of 2 to 10; and R is an ethylenically unsaturated hydrocarbon radical derived from fumaric, maleic, citraconic, mesaconic, or itaconic acid, which comprises reacting the compound $C_mF_{2m+1}-C_nH_{2n}X$ wherein *m* and *n* are as defined above, and X is iodine, bromine or chlorine with a mono ammonium salt of fumaric, maleic, citraconic, mesaconic, or itaconic acid. In preferred embodiment, the monotriethylammonium fumarate is reacted with 1,1,2,2-tetrahydroperfluoroalkyl iodide. Yields in excess of 50 percent are obtained. The esters prepared by the process of this invention form polymers which are useful in oil and water-repellent textile finishes.

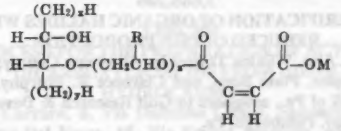
3,686,282

ALKYL VICINAL HYDROXY ALKOXY ETHER MALEATE COMPOUNDS

Roger L. Kidwell, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sept. 8, 1969, Ser. No. 856,206
Int. Cl. C07c 69/60
U.S. Cl. 260—485 G 4 Claims

New compounds represented by the formula:



wherein *x* and *y* are each integers from 1 to 17, the sum of *x* + *y* being from 12 to 18; R is hydrogen or methyl; and M is sodium or potassium, are useful surfactants and lime soap dispersants, which provide, in admixture with natural soaps, excellent cleansing compositions having reduced tendency to deposit precipitates in hard water.

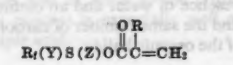
3,686,283

FLUORINATED THIOETHER-ACRYLIC ESTERS AND POLYMERS THEREOF

John Thomas Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,472
Int. Cl. C07c 69/54
U.S. Cl. 260—486 H 10 Claims

Fluorinated thioether-acrylic esters of the formula



wherein R is hydrogen or methyl, R_f is a perfluoroalkyl group of four to 16 carbon atoms and each of Y and Z is a saturated, aliphatic divalent group in which Y contains one to 11 carbon atoms and Z contains two to 11 carbon atoms. Also disclosed are polymers of such thioether esters for use in rendering textiles oil and water repellent.

3,686,284

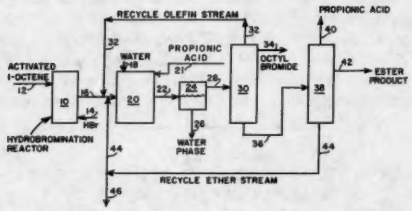
Patent Not Issued For This Number

3,686,285

ESTERIFICATION OF ORGANIC HALIDES WITH REDUCED ETHER PRODUCTION

Yong Kee Ahn, Wilkins Township, Allegheny; Barrett L. Cupples, Plum Boro, and Clarence R. Murphy, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 23, 1970, Ser. No. 21,624
Int. Cl. C07c *67/00*
U.S. Cl. 260—493 **10 Claims**



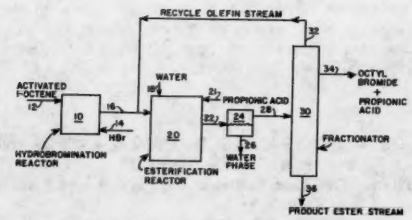
An ester is prepared by reacting an organic acid, such as propionic acid, with an organic halide, such as n-octyl bromide, in the presence of water and an ether having a similar configuration and having twice as many carbon atoms as the organic portion of the organic halide.

3,686,286

ESTERIFICATION OF ORGANIC HALIDES WITH REDUCED OLEFIN PRODUCTION

Yong Kee Ahn, Wilkins Township, Allegheny County; Barrett L. Cupples, Plum Boro, and Clarence R. Murphy, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 23, 1970, Ser. No. 21,830
Int. Cl. C07c *67/00*
U.S. Cl. 260—493 **9 Claims**



An ester is prepared by reacting an organic acid, such as propionic acid, with an organic halide, such as n-octyl bromide, in the presence of water and an olefin having a similar configuration and the same number of carbon atoms as the organic portion of the organic halide.

3,686,287

HYDROCARBON OLEFIN OXIDATION

Evord F. Knights, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 12, 1968, Ser. No. 775,124
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **7 Claims**

Hydrocarbon olefins are oxidized to unsaturated esters including vinyl esters by vapor phase oxidation in the presence of a heterogeneous catalyst comprising a Group VIII noble metal, a nitrogen oxide as the oxidant and an aliphatic carboxylic acid. In a typical example, ethylene is oxidized to vinyl acetate by contacting ethylene with a vapor mixture of oxygen, nitric oxide and acetic acid in the presence of a palladium containing catalyst. Products of the oxidation are useful monomers.

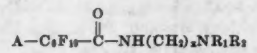
3,686,288

PERFLUOROCYCLOHEXANE CARBOXAMIDES

Dewey G. Holland, Allentown, Pa., and John H. Polevy, Attleboro, Mass., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Nov. 7, 1969, Ser. No. 874,978
Int. Cl. C07c *103/86*
U.S. Cl. 260—501.15 **12 Claims**

Compounds having the general structure:



$$A-C_6F_{10}-\overset{O}{\overset{\|}{C}}-NH(CH_2)_xNR_1R_2$$

and salts thereof
wherein
—C_6F_{10}— is a perfluorocyclohexane moiety,
A is fluorine or a perfluoroalkyl group having from one to 10 carbon atoms,
x is an integer from 2 to 3, and
R_1 and R_2 are the same or independently selected from alkyl or aryl groups, the alkyl groups having from one to six carbon atoms.

3,686,289

PRODUCTION OF PERCARBOXYLIC ACIDS

John Vincent Fletcher, 10 Valley Way, Knutsford, and Dennis Martin, 26 Alderdale Rd., Cheadle Hulme, both of England

Filed April 7, 1969, Ser. No. 813,847
Claims priority, application Great Britain, April 5, 1968, 16,579/68
Int. Cl. C07c *73/10*
U.S. Cl. 260—502 R **10 Claims**

A percarboxylic acid solution is produced from an adduct of urea and hydrogen peroxide by mixing this adduct with an extracting solvent constituted by a lower alkyl ester, a lower alkyl ketone or a lower alkyl ortho-phosphate, whereby a hydrogen peroxide solution in the extracting solvent results; the said extracting solvent is replaced with the carboxylic acid corresponding to the required percarboxylic acid, whereby reaction of the carboxylic acid with the hydrogen peroxide occurs to give the required percarboxylic acid in solution in said carboxylic acid from which solution water resulting during the reaction is removed by azeotropic distillation.

3,686,290

PROCESSES FOR PREPARING OLEFINIC ORGANO-PHOSPHORUS COMPOUNDS

Robert L. Carroll, 5009 New Kent Rd., Richmond, Va.

Filed May 29, 1969, Ser. No. 829,121
Int. Cl. C07f *9/38*; C02b *1/22*
U.S. Cl. 260—502.4 P **4 Claims**

A method for preparing vinylidene diphosphonate salt which comprises the steps of heating a salt of 1-hydroxy, 1-ethylidene diphosphonic acid, which is prepared by reacting

the corresponding free acid with an alkaline material such as sodium hydroxide, the mole ratio of the alkaline material to said acid being at least about 3:1, in a reaction zone which is maintained at a temperature between the range of from 300° C to 500° C for a sufficient period of time to form such vinylidene diphosphonate salt.

3,686,291

THIO DERIVATIVES OF 2-HYDROXY-3-NAPHTHIOC ACID

Brian Gadsby; Peter Rodway Leeming, and Michael Barrie Thomas, all of Pfizer Inc., 235 E. 42nd St., New York, N.Y., assignors to Pfizer Inc., New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,426

Int. Cl. C07c *149/40*

U.S. Cl. 260—516 **17 Claims**

Fibrinolytic agents related to 1-thio- and 1-thiomethyl-2-hydroxy-3-naphthoic acid.

3,686,292

Patent Not Issued For This Number

3,686,293

PROCESS FOR THE PREPARATION OF AROMATIC CARBOXYLIC ACIDS

Giorgio Gualdi, Piazza Isotta Nogarola 7, Verona; Luigi Lugo, Via dei Tulipani 14, Milan, and Cesare Reni, Via Oberdan 10, Busto Arsizio (Varese), all of Italy

Filed July 13, 1970, Ser. No. 54,604

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **13 Claims**

A process for the catalytic oxidation of p-xylene is liquid phase to form terephthalic acid, consisting essentially of partially oxidizing p-xylene, in an initial stage of reactions, in an aliphatic carboxylic acid environment and in the presence of catalysts consisting of heavy metal salts, oxidation being completed, in a second stage of reaction, in the presence of a bromo-aldehyde by way of reaction activator.

3,686,294

PROCESS FOR THE PRODUCTION OF METHACRYLIC ACID

Yoshio Ito; Shinichi Amiyama; Akinobu Toyoda, and Shoichitro Minami, all of Yokohama, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,593

Int. Cl. C02c *51/32*

U.S. Cl. 260—530 N **3 Claims**

A process for the production of methacrylic acid which comprises catalytically reacting in the vapor phase a gaseous mixture containing methacrolein and molecular oxygen at an elevated temperature in the presence of a catalyst consisting of molybdenum arsenic, phosphorus, and oxygen, said catalyst being of a composition such that the atomic ratio of molybdenum to arsenic is (7–30):1 and the atomic ratio of molybdenum to phosphorus is (5–30):1.

3,686,295

CATALYTIC CONVERSION OF SATURATED HYDROCARBONS TO UNSATURATED PRODUCTS BY OXIDATION IN THE PRESENCE OF A HALOGEN

Robert K. Grasselli, Garfield Heights, and Robert C. Miller, Northfield, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 739,166, June 24, 1968. This application June 1, 1970, Ser. No. 42,460

Int. Cl. C07c *51/20, 45/02*

U.S. Cl. 260—533 N **5 Claims**

The instant application is related to a process for the oxidation of saturated hydrocarbons and substituted saturated hydrocarbons in a vapor phase reaction over an antimony-containing oxidation catalyst in which the hydrocarbon in the presence of a minor quantity of an inorganic or organic halide, hydrogen chloride, hydrogen bromide or hydrogen iodide or of a halogen other than fluorine, is reacted with (a) oxygen, to form unsaturated aldehydes and acids or (b) oxygen and ammonia, to form unsaturated nitriles.

3,686,296

THIOGLYCEROL-NITROGEN BASE MOLECULAR COMPLEX DEPILATORY COMPOSITIONS

Harvey A. Yablonsky, Elizabeth, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed April 2, 1969, Ser. No. 812,903

Int. Cl. C07c *101/20*; A61k *7/14*

U.S. Cl. 260—534 S **2 Claims**

A thioglycerol-nitrogen base molecular complex useful as a depilatory; complexes are unimolecular or hemimolecular.

3,686,297

β,β,β'-TRICHLORO-α-HYDROXY-ISO-BUTYRIC ACID

Richard W. Hein, Ridgefield, and Herman A. Bruson, Woodbridge, both of Conn., assignors to Eschemco Corporation, Allentown, Pa.

Division of Ser. No. 742,534, July 5, 1968, Pat. No. 3,575,830. This application June 18, 1970, Ser. No. 57,894

Int. Cl. C07c *59/04*

U.S. Cl. 260—535 H **1 Claim**

A process for the beta-chlorination of α-hydroxyisobutyric acid by treating it with chlorine gas in the presence of light.

3,686,298

Patent Not Issued For This Number

3,686,299

PROCESS FOR THE PREPARATION OF ACYCLIC DICARBOXYLIC ACIDS FROM DIENIC HYDROCARBONS

Giorgio Carraro, 8, Via Damiano Chiesa, Saronno (Varese); Adriano Del Vesco, 15, Via Frutta, Mantova, and Santino Olindo, 94, Via Garibaldi, Venezia-Mestre, all of Italy, assignors to Montecatini Edison S.P.A., Milan, Italy

Filed Jan. 27, 1969, Ser. No. 794,418

Claims priority, application Italy, Jan. 31, 1968, 12210 A/68

Int. Cl. C07c *51/36*; C0 7 *51/52*

U.S. Cl. 260—537 R **10 Claims**

A process for the preparation of saturated dicarboxylic acids starting from dienic hydrocarbons is disclosed herein, characterized in that it is carried out in three steps, the first step of which comprises the formation of a mixture of products consisting essentially of alkali or alkaline earth metal salts of unsaturated dicarboxylic acids, through the reaction of dienic hydrocarbons, CO_2 and an amalgam of an alkali or alkaline earth metal, carried out in a reaction medium comprising an inert organic solvent; the second step comprising the separation of the desired acid or acids in the pure state from said reaction mixture in an otherwise conventional manner; and finaly the third step of which comprises the hydrogenation, according to per se known method of the purified unsaturated dicarboxylic acid or acids to the corresponding saturated acids. The process is especially well adapted for the production of adipic acid.

3,686,300
PROCESS FOR THE PREPARATION OF P-TOLUENESULFOCHLORIDE

Joachim Oten, and Georg Schaeffer, both of Farbwerke Hoechst AG, Frankfurt/Main, Germany

Filed March 11, 1970, Ser. No. 18,761
Claims priority, application Germany, March 14, 1970, P 19 12 956.7
Int. Cl. C07c *51/58*
U.S. Cl. 260—543 R 4 Claims

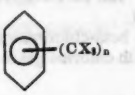
Improved process for the preparation of p-toluenesulfochloride, wherein for each mol of toluene about 1 – 2 mols of chlorosulfonic acid and about 0.1 – 1 mol of an alkali metal-, alkaline-earth metal- or ammonium salt are placed in a reaction vessel, Toluene is added thereto and after reacting at 60° – 90° C the mixture is cooled to about 30° – 40° C, a further amount of chlorosulfonic acid (at least 1 mol per each mol of toluene) is added and the reaction mixture is treated to form p-toluenesulfochloride. In comparison with known processes the instant process has the great advantage that the p-toluenesulfochloride is obtained in a much higher yield.

3,686,301
PREPARATION OF HALOSULFONYLBENZOYL HALIDES

Lawrence S. Kirch, 871 Oriole Lane, Huntingdon Valley, Pa.

Filed May 23, 1969, Ser. No. 827,157
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 M 3 Claims

Halosulfonylbenzoyl chlorides are prepared by the reaction of sulfobenzoic acids with compounds of the formula



wherein X is chlorine or bromine and n is 1 or 2.

3,686,302
PROCESS FOR THE MANUFACTURE OF MONOCHLOROACETYL CHLORIDE

Wolfgang Opitz, 22 Gartenstrasse, Knapsack near Cologne, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Oct. 15, 1969, Ser. No. 866,527
Claims priority, application Germany, Oct. 22, 1968, P 18 04 436.5
Int. Cl. C07c *53/20*
U.S. Cl. 260—544 Y 4 Claims

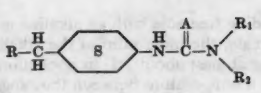
Production of monochloroacetyl chloride by reacting monochloroacetic acid with phosgene at an elevated temperature. Gaseous phosgene is introduced into a monochloroacetic acid melt heated to a temperature between about 90° and 130° C and having a finely divided catalyst therein, consisting of one or more noble metals belonging to group VIII of the periodic system, or a suitable salt thereof, crude monochloroacetyl chloride in vapor form is continually removed from the reaction mixture, the vaporous matter is condensed and distilled to isolate pure monochloroacetyl chloride therefrom.

3,686,303
CERTAIN SUBSTITUTED CYCLOHEXYL UREAS AND THIOUREAS

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 574,498, Aug. 18, 1966. This application April 20, 1967, Ser. No. 635,301
Int. Cl. C07c *127/18, 157/08, 119/00*
U.S. Cl. 260—553 R 8 Claims

1-(4-Higher alkyl-substituted cyclohexyl)-3-alkyl and 3,3-dialkylureas and thioureas of the formula:



wherein
R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl or tricycloalkyl;
R_1 and R_2 are hydrogen, alkyl, haloalkyl, cyanoalkyl, nitroalkyl, alkoxyalkyl, thioalkoxyalkyl, and
A is oxygen or sulfur.
Typical is 1-(cis-4-cyclohexylmethylcyclohexyl)-3-methylurea useful as an animal repellant.

3,686,304
PRODUCTION OF ACRYLIC UREIDES

Franz Merger, Ludwigshafen, Germany, assignor to Badische Anilin - & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Rhineland-Pfalz, Germany

Filed Dec. 27, 1968, Ser. No. 787,583
Claims priority, application Germany, Dec. 27, 1967, P 16 43 723.3
Int. Cl. C07c *127/14*
U.S. Cl. 260—553 E 9 Claims

The production of acrylic ureides by the reaction of urea with acrylyl chloride, and the new acrylic ureide. The new product of the process is a pesticide and a valuable intermediate for the production of synthetic resins, textile auxiliaries, pesticides, stabilizers and baking finishes.

3,686,305
METHOD FOR SYNTHESIZING UREA

Eiji Otsuka; Kazumichi Kanai, both of Fujisawa, and Shigeru Inoue, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 19, 1969, Ser. No. 800,550
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 A 14 Claims

A process for synthesizing urea comprising reacting carbon dioxide and ammonia at urea forming temperatures and pressures to produce a reaction mixture containing urea, water, unreacted ammonium carbamate, gaseous carbon dioxide and gaseous ammonia, introducing said reaction mixture into a heat recovering zone to recover excess heat of reaction thereby condensing most of said gaseous carbon dioxide and gaseous ammonia contained in reaction mixture, and further reacting the reaction mixture from said heat recovering zone to form additional urea.

3,686,306
HALOGEN-SUBSTITUTED DERIVATIVES OF N-3-OXOHYDROCARBONSUBSTITUTED ACRYLAMIDES

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Dec. 10, 1970, Ser. No. 97,055
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 N 10 Claims

Halogenation of N-3-oxohydrocarbon-substituted acrylamides, such as diacetone acrylamide, produces the corresponding substituted 2,3-dihalopropionamides. These can in turn be dehydrohalogenated to give the corresponding substituted 2-haloacrylamides. The latter compounds may also be prepared by the reaction of two moles of an aldehyde or ketone, or one mole of a β-hydroxy aldehyde or ketone or an α,β-unsubstituted aldehyde or ketone, with 2-chloroacrylonitrile in the presence of sulfuric acid. The substituted 2-chloroacrylamides are useful as monomers for the preparation of fire-resistant polymers.

3,686,307

CONVERSION OF NITRILES TO AMIDES IN THE PRESENCE OF ALKALINE CATALYSTS

Janice L. Greene, Chagrin Falls, and Rosalind E. Clark, North Randall, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Feb. 7, 1969, Ser. No. 797,660
Int. Cl. C07c *103/58*
U.S. Cl. 260—561 N 5 Claims

A nitrile, such as methacrylonitrile, is converted to the corresponding carboxamide, such as methacrylamide, in high yield at an elevated temperature in the presence of water, a tertiary alcohol, such as t-butyl alcohol, and an alkaline catalyst, such as lithium hydroxide.

3,686,308

5-LOWER ALKANOYL-2-GLYCYLAMINO-BENZOPHENONES

Robert Ye-Fong Ning, West Caldwell, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed April 15, 1970, Ser. No. 28,935
Int. Cl. C07c *103/42*
U.S. Cl. 260—562 N 4 Claims

The present invention relates to processes for the preparation of 7-lower alkanoyl-1,4-benzodiazepin-2-ones. These compounds are known to be useful as muscle relaxants, sedatives and anticonvulsants.

3,686,309

N-(DICHLORO-α-HYDROXYBENZYL)-N'-AMIDINOHYDRAZINES AND THE SALT THEREOF

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 755,401, Aug. 26, 1968, abandoned. This application Aug. 10, 1970, Ser. No. 62,658
Int. Cl. C07c *133/10*
U.S. Cl. 260—564 F 6 Claims

This disclosure relates to dichlorobenzylamidinohydrazines, e.g., N-(2,6-dichloro-α-hydroxybenzyl)-N'-amidinohydrazine hydrochloride. These compounds are useful as hypotensives.

3,686,310

PROCESS FOR MAKING POLYKETENE-IMINES

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 661,166, Aug. 9, 1967, Pat. No. 3,554,819. This application Oct. 7, 1969, Ser. No. 871,354
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 2 Claims

A novel method of synthesis of diketeneimines for use as a cross linking agent in solid propellant compositions. The synthesis involves the reaction of a polyacid chloride with a polyamine by using an amine that is more basic than the polyamine to form an intermediate product. The intermediate product is dehydrated with a dehydrating agent to form a final product that is thereafter isolated.

3,686,311

BASIC α-NORTRICYCLYL-(3)-BENZYL ETHER, AND THE SALTS THEREOF

Herbert Arnold, Bielefeld; Norbert Brock, Uerentrup; Engelbert Kuhas, Gadderbaum; Dieter Lenke, Bielefeld, and Hans Pohle, Brackwede, all of Germany, assignors to ASTA-WERKE Aktiengesellschaft Chemische Fabrik, Brackwede Westphalia, Germany

Filed Aug. 21, 1969, Ser. No. 857,272
Claims priority, application Germany, Sept. 6, 1968, P 17 93 364.1
Int. Cl. C07c *91/16*
U.S. Cl. 260—570.6 3 Claims

The present invention is related to certain new basic α-nortricyclyl-(3)-benzyl ethers and salts, quaternary ammonium salts and N-oxides thereof, pharmaceutical composition comprising the same as active principle and a process for the treatment of spasm.

3,686,312

3,5-DIHYDROCARBYL-4-HYDROXYPHENYL 3-HYDROCARBYL-4-HYDROXY-5-(DIALKYLAMINO METHYL) BENZYL SULFIDE ANTIOXIDANTS

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,294
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 6 Claims

This invention is concerned with a new series of compounds found to be useful as antioxidants, and their method of production. The compounds described as 3,5-dihydrocarbyl-4-hydroxyphenyl 3-hydrocarbyl-4-hydroxy-5-(dialkylamino methyl) benzyl sulfides are particularly effective for retarding oxidative deterioration in rubber, plastics, fats and petroleum products.

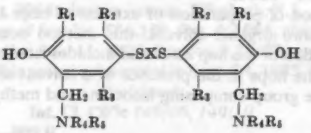
3,686,313

1,2-BIS[3-ALKYL-4-HYDROXY-5-(DIALKYLAMINOMETHYL-PHENYLTHIS]ETHANES

Francis X. O'Shea, Naugatuck, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Nov. 29, 1968, Ser. No. 780,237
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.9 3 Claims

This invention is directed to a new series of compounds which are useful as antioxidants. These compounds are represented by the formula:



wherein R_1 is selected from the group consisting of alkyl groups of up to 12 carbon atoms, cycloalkyl groups of from about six to eight carbon atoms and aralkyl groups of from about seven to nine carbon atoms, R_2 and R_3 are selected from the group consisting of hydrogen and methyl, R_4 and R_5 are selected from the group consisting of alkyl groups of up to five carbon atoms and X is a diradical containing from about two to about 14 carbon atoms and is selected from the group consisting of:

a. polymethylene diradicals of the formula $-(CH_2)_n-$ wherein n is a whole number from 2 to 14;

b. branched chain polyalkylene diradicals of the formula:

wherein n is a whole number from 0 to 11 and the R groups may be hydrogen or alkyl groups and at least one of the R groups is an alkyl group.

3,686,314

SELECTIVE EXTRACTION OF DIAMINOTOLUENE FROM AN AMMONOLYSIS PRODUCT MIXTURE

John D. Bacha, and Charles M. Selwitz, both of Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 25, 1970, Ser. No. 49,940
Int. Cl. C07c *85/16*
U.S. Cl. 260—582 8 Claims

Diaminotoluene is selectively separated from an ammonolysis product mixture comprising dichlorotoluene,

aminochlorotoluene, diaminotoluene, a cuprous salt catalyst, by-product ammonium salts and excess aqueous ammonia by initially contacting the product mixture with a water immiscible hydrocarbon solvent, such as heptane, to extract all of the dichlorotoluene and aminochlorotoluene and essentially none of the diaminotoluene, and then contacting the residual diaminotoluene-rich aqueous phase with a water-immiscible organic solvent, such as methylene chloride, to extract substantially all of the diaminotoluene.

3,686,315

REACTION PRODUCT OF EPICHLOROHYDRIN COMPOUND AND BETA-ALKYLAMINE

Robert H. Rosenwald, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 463,901, June 14, 1965, Pat. No. 3,457,053. This application Feb. 24, 1969, Ser. No. 801,853

Int. Cl. C07c *91/02, 91/10*

U.S. Cl. 260—584 R **3 Claims**

Reaction product of a epichlorohydrin compound and a beta-alkylamine. The latter is defined as an alkylamine in which the alkyl group is attached to the nitrogen atom at its beta carbon atom. The reaction product is particularly useful as an additive to retard deterioration of hydrocarbon oils.

3,686,316

METHOD OF PREPARATION OF EXTRACTS OF HOPS

Maurice G. E. Verzele, 13, Krijgslaan, Gent, Belgium

Filed Jan. 8, 1968, Ser. No. 696,139

Int. Cl. C07c *45/00*; C12c *9/02*

U.S. Cl. 260—586 R **12 Claims**

A method of preparation of extracts of hops by means of one or more organic solvent, this method comprising the isomerization of the hop acids and includes isomerizing the α-acids of the hops in the presence of a solvent selected from among the group comprising isooctane and methyl cyclohexane.

3,686,317

A-NOR-13-ETHYL-17-HYDROXY-A-NORGON-3-EN-2-ONE

George C. Buzby, Jr., Philadelphia; Charles R. Walk, King of Prussia, and Herchel Smith, Wayne, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation of Ser. No. 536,438, March 22, 1966, abandoned. This application Sept. 17, 1968, Ser. No. 760,304

Int. Cl. C07c *49/44*

U.S. Cl. 260—586 H **1 Claim**

The invention is directed to the compound dl-13-ethyl-17-hydroxy-A-norgon-3-en-2-one showing androgenic and anabolic activity.

3,686,318

VAPOR PHASE CONVERSION OF CYCLOHEXANECARBOXYLIC ACID TO CYCLOHEXANONE

Edward J. Murray, Buffalo, and Leon O. Winstrom, East Aurora, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 615,843, Feb. 13, 1967, abandoned, which is a continuation of Ser. No. 360,132, April 15, 1964, abandoned. This application Jan. 17, 1969, Ser. No. 800,795

Int. Cl. C07c *45/18*

U.S. Cl. 260—586 R **7 Claims**

A process for preparing cyclohexanone whereby a mixture of cyclohexane carboxylic acid in the vapor phase and a gas containing molecular oxygen at temperatures of from about 250°C. to 600°C. are passed through a static catalyst bed, said catalyst containing copper or a copper salt.

3,686,319

2,4,6-TRIHYDROXY CHALCONE DERIVATIVES

Louis Lafon, 5 rue de l'Alboni, Paris, 16e, France

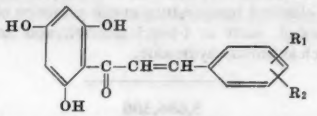
Filed March 5, 1970, Ser. No. 16,945

Claims priority, application Great Britain, March 5, 1969, 11,594/69

Int. Cl. C07c *49/82*

U.S. Cl. 260—590 **3 Claims**

2,4,6-Trihydroxychalcone derivatives of the formula:



wherein R_1 is hydrogen, halogen, hydroxy, nitro, alkoxy, amino, alkylamino or dialkylamino and R_2 is halogen, jydroxy, alkoxy, nitro, amino, alkylamino or dialkylamino, each of the alkyl portions of the aforesaid alkoxy, alkylamino or dialkylamino radicals having one to three carbon atoms, have hypocholeretic, hypotensive and anti-coagulant properties.

3,686,320

BIS-PHENOXY COMPOUNDS

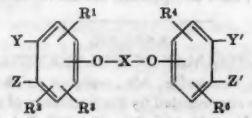
Colin Fitzmaurice, and Thomas Brian Lee, both of Cheshire, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

Division of Ser. Nos. 536,281, March 22, 1966, Pat. No. 3,419,578, and Ser. No. 765,722, July 30, 1968. This application Sept. 25, 1968, Ser. No. 762,638. The portion of the term of this patent subsequent to Dec. 31, 1985, has been disclaimed.

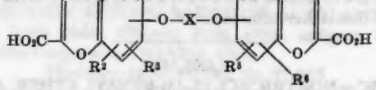
Int. Cl. C07c *49/78*

U.S. Cl. 260—592 **4 Claims**

Compounds of the formula



wherein Z and Z′ are hydroxy and Y and Y′ are H, —$COCH_3$, or —COOR′ (R′ being an alkyl group) are used to prepare compounds of the formula



and therapeutically acceptable salts, esters and amides thereof, wherein R^1, R^2, R^3, R^4, R^5 and R^6 are the same or different and each is H or halogen, lower alkyl, hydroxy, lower alkoxy, substituted lower alkyl or substituted lower alkoxy, and X is a saturated or unsaturated, substituted or unsubstituted, straight or branched polymethylene chain which may be interrupted by one or more carbocyclic rings or oxygen-containing heterocyclic rings, oxygen atoms or carbonyl groups. The latter compounds are useful as inhibitors of certain antigen-antibody reactions, being particularly useful for the relief and prophylaxis of asthma.

3,686,321

PRODUCTION OF 2-METHYLHEPT-1-EN-6-ONE

Herbert Mueller, Frankenthal, and Hermann Overwien, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 18, 1971, Ser. No. 107,589
Int. Cl. C07c 49/20
U.S. Cl. 260—593 R 1 Claim

A process for the production of 2-methylhept-1-en-6-one by heating 2,2,6-trimethyl-3,4-dihydropyran in the presence of isobutene at a temperature of from 200° to 400° C.

3,686,322

PROCESS FOR PURIFYING VANILLIN

Donald Guy Diddams, Schofield, and Norman Ernest Renaud, Rothschild, both of Wis., assignors to Sterling Drug, Inc., New York, N.Y.

Continuation of Ser. No. 780,592, Dec. 2, 1968, abandoned. This application Dec. 10, 1970, Ser. No. 96,974
Int. Cl. C07c 45/24
U.S. Cl. 260—600 6 Claims

Crude vanillin in aqueous mixture with structurally related compounds, particularly vanillin from the mother liquors obtained in purification of vanillin derived from the oxidation of lignin liquor, is purified by partial extraction with hot hydrocarbon solvent, cooling to crystallize vanillin therefrom and repeating the procedure, preferably re-using the same portion of solvent, to extract succeeding portions of vanillin.

3,686,323

THIOALKANAL-S-OXIDES

Michael H. Brodnitz, Matawan; John V. Pascale, Old Bridge, and Manfred H. Vock, West Orange, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,816
Int. Cl. C07c 161/00
U.S. Cl. 260—607 R 5 Claims

This invention relates to novel thio-alkanal-S-oxides of the formula R S O wherein R is a straight-chain alkylidene group having from two to six carbon atoms. These novel compounds are useful to alter the flavor of consumable products. They may be prepared by reacting an alkyl sulfinyl chloride and a lower tertiary amine at a temperature below about −50° C.

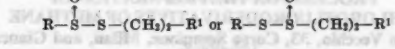
3,686,324

PROCESS FOR PRODUCING DI- AND TRISULFIDES FROM THIOSULFINATES

Michael H. Brodnitz, Matawan, and John V. Pascale, Old Bridge, both of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Filed Aug. 18, 1969, Ser. No. 851,067
Int. Cl. C07c 149/12
U.S. Cl. 260—608 5 Claims

Novel processes for the production of alliaceous flavoring compositions comprising heating at least one thiosulfinate having the formula



to produce a mixture of di- and trisulfides containing R — S — S — CH = CH — R^1 and R — S — S — S — CH = CH — R^1, R being an alkyl or alkenyl group having one to five carbon atoms and R^1 being hydrogen or an alkyl group having one to three carbon atoms, together with processes for preparing food compositions, and food and flavoring compositions so prepared.

3,686,325

POLYPHENOLIC DISULFIDES AND METHOD FOR PRODUCING SAME

Howard A. Hageman, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Feb. 24, 1970, Ser. No. 13,749
Int. Cl. C07c 149/36
U.S. Cl. 260—608 16 Claims

The compounds are of the class of dithiobis(beta-arylalkylene)diphenols and chain-extended polydithio-polyphenols derived therefrom. They are useful as antioxidants in compositions containing unsaturated rubbers — that is, so-called diene rubbers. A typical compound of the class is 4,4′-dithiobis(beta-phenylethylene)diphenol, made by the condensation of one mole of bis(beta-chloro-phenethyl)disulfide with two moles of phenol. Chain extension is apt to occur by reaction of the first-formed dithio-diphenol with additional amounts of the dichloro coupling agent and the starting phenol, forming poly-(dithio) polyphenolic compounds having repeated alternating units of the coupler and phenol moieties.

3,686,326

ALLYLIC SULFIDE REACTION PRODUCTS

Alexis Oswald, 1098 Sunny Slope Drive, Mountainside, N.J.; Daniel N. Hall, 616 Dewitt Street, Linden, N.J., and Karl Griesbaum, 380 Irvington Avenue, Elizabeth, N.J.

Continuation of Ser. No. 584,109, Oct. 4, 1966, abandoned. This application Feb. 11, 1970, Ser. No. 9,126The portion of the term of this patent subsequent to Sept. 24, 1985, has been disclaimed.
Int. Cl. C07c 149/06, 149/10
U.S. Cl. 260—609 R 9 Claims

Open-chain, bis- and tris-sulfides are synthesized by the free radical, liquid phase addition of simple thiols to diallylic sulfides. Similarly, addition of thiol acids results in the corresponding mono- and di-thiol esters, and the poly addition of dithiols to diallylic sulfides yields terminally difunctional polythioethers. The mono- and diadduct compositions are useful as pesticides, while the poly adducts are useful in the preparation of polymers, particularly as basic ingredients for mastics compositions.

3,686,327

Patent Not Issued For This Number

3,686,328

CATALYTIC PRODUCTION OF DIMETHYL SULFIDE

Gerhard Meyer, Obernburg; Helmut Magerlein, and Hans-Dieter Rupp, both of Erlenbach, all of Germany, assignors to Glanzstoff AG, Wuppertal, Germany

Filed Aug. 11, 1969, Ser. No. 849,199
Claims priority, application Germany, Aug. 10, 1968, P 17 93 173.6
Int. Cl. C07c 149/14
U.S. Cl. 260—609 A 9 Claims

Process for the catalytic production of dimethyl sulfide in which dimethyl ether and hydrogen sulfide can be reacted in about equimolar amounts to achieve almost quantitative yields of dimethyl sulfide by carrying out the reaction in the presence of a catalyst consisting essentially of aluminum oxide having a superimposed layer of up to about 10 percent by weight of silica applied thereto.

3,686,329

PROCESS FOR PREPARING ORGANIC THIOLS FROM POLYSULFIDES

Donald N. Bernhart, Mt. Pleasant, Tenn., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,928

Int. Cl. C07c *149/06*

U.S. Cl. 260—609 R **7 Claims**

Benzene dithiol is produced by refluxing an appropriate polydisulfide in the presence of glacial acetic acid, powdered zinc and a solvent comprising a heterocyclic amine solvent having a pyridine nucleus, e.g. pyridine. The product is worked up by dissolving residual zinc in hydrochloric acid; and the organic portion is extracted with ether which is removed by distillation to leave a product containing benzene dithiol. A wide variety of organic thiols can be produced employing the heterocyclic amine solvents having a pyridine nucleus.

3,686,330

Patent Not Issued For This Number

3,686,331

ANTI-MICROBIAL PHENYL 3-HALOPROPARGYL ETHERS

Jay Philip O'Brien, Irvington, and Albert Israel Rachlin, Verone, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 485,904, Sept. 8, 1965, Pat. No. 3,489,805, which is a continuation-in-part of Ser. No. 433,209, Feb. 16, 1965, abandoned. This application May 28, 1969, Ser. No. 828,731

Int. Cl. C07c *43/20*

U.S. Cl. 260—612 D **1 Claim**

Anti-microbial phenyl 3-halopropargyl ethers which are prepared by condensing a phenol with a 3-halopropyne.

3,686,332

Patent Not Issued For This Number

3,686,333

PROCESS FOR PREPARING UNSATURATED ALCOHOLS

Coenraad J. Duyverman, Sittard, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

Filed Aug. 30, 1968, Ser. No. 756,400

Claims priority, application Netherlands, Sept. 1, 1967, 6,712,077

Int. Cl. C07c *29/14*; B01j *11/32*

U.S. Cl. 260—638 B **8 Claims**

A process for preparing unsaturated alcohols from the corresponding unsaturated aldehydes with the aid of hydrogen at elevated temperature and pressure and in the liquid phase is disclosed, wherein a catalyst which is dissolved in the liquid phase is utilized. The catalyst contains a cadmium salt and at least one salt of a transition metal from the groups 3*b*, 4*b*, 5*b* and 6*b* of the Periodic System. The catalyst system is highly selective and the selectivity is retained.

3,686,334

DIRECT HYDRATION OF ETHYLENE TO ETHANOL

Robert A. Britton, 43 B Minebrook Rd., Edison, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 13, 1969, Ser. No. 790,831

Int. Cl. C07c *29/04, 29/08*

U.S. Cl. 260—641 **6 Claims**

Ethanol is produced through the direct hydration of ethylene by reacting a mixture of ethylene and water in the vapor phase over a supported sesqui-phosphoric acid catalyst. The preferred catalyst species is the hemihydrate of meta phosphoric acid. Typically, the direct hydration reaction is conducted at elevated pressures and at temperatures above the dew point of water at reaction conditions.

3,686,335

5-VINYL-5H-DI BENZO(A,D)CYCLOHEPTENES

Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Division of Ser. No. 787,562, Dec. 27, 1968, Pat. No. 3,576,853, which is a division of Ser. No. 461,176, June 3, 1965, Pat. No. 3,449,427. This application Dec. 21, 1970, Ser. No. 100,371

Int. Cl. C07c *25/00, 25/18*

U.S. Cl. 260—649 R **1 Claim**

5-Vinyl-5H-dibenzo[a,d]cyclo-heptenes are useful in the preparation of cyclopropanecarboxylic acid derivatives. The latter are useful as intermediates for the preparation of corresponding aminocyclopropane derivatives of 5H-dibenzo[a,d]cycloheptenes which have antidepressant, tranquilizing and anorectic activity.

3,686,336

PERFLUORODICYCLOPENTADIENE

Earl Phillip Moore, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1964, Ser. No. 413,621

Int. Cl. C07c *23/38*

U.S. Cl. 260—648 F **1 Claim**

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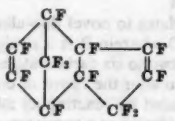
This invention relates to a new chemical compound, perfluorodicyclopentadiene ($C_{10}F_{12}$) also called the dimer of perfluorocyclopentadiene (C_5F_6). The compound perfluorodicyclopentadiene has a molecular weight of 348, boiling point 119°-120° C. at atmospheric pressure, a density at 45° C. of 1.75, refractive index nD^{45}=1.3,387, a melting point of about 43° C.; the compound may be represented by the structural formula:



3,686,337

METHOD OF REDUCING THE HALOGEN CONTENT OF HALOAROMATICS

Kuo Yuan Chang, 2214 Wyllip Court, Midland, Mich.

Filed May 28, 1970, Ser. No. 41,553

Int. Cl. C07c *25/04*

U.S. Cl. 260—650 R **7 Claims**

Halobenzenes, halobiphenyls and halonaphthalenes are dehalogenated by heating the haloaromatic in the presence of a lower dialkanolamine or lower trialkanolamine for a time sufficient to give the desired reduction of the aromatic halogen content.

3,686,338

PROCESS FOR THE PREPARATION OF CHLOROFLUORODERIVATIVES OF METHANE

Martino Vecchio, 33, Corso Sempione, Milan, and Giancarlo Stefani, 11, via Matteotti, Bollate, both of Italy

Filed May 8, 1970, Ser. No. 35,918

Claims priority, application Italy, May 13, 1969, 16761 A/59

Int. Cl. C07c *17/10, 17/20, 19/08*

U.S. Cl. 260—653.8 **7 Claims**

A process is disclosed for the preparation of chlorofluorinated methane derivatives by the reaction of a

gaseous mixture consisting of (a) methane, chlorine and at least one halogenated hydrocarbon, or (b) carbon tetrachloride and said hydrocarbon, with solid calcium fluoride or with a calcium fluoride-containing substance, (e.g. fluorite) according to the fluid bed technique, wherein the solid calcium fluoride-containing substance is fed in the form of a suspension in at least a portion of the halogenated hydrocarbon, preferably consisting of at least one recycled reaction intermediate product, in the liquid state at a temperature between about 450° and 550° C. The halogenated hydrocarbon consists of one or more of the following halogenated hydrocarbons: CCl_4, $CHCl_3$, CH_2Cl_2, CH_3Cl, $CFCl_3$, CHF_2, CF_2Cl_2, CF_3Cl, $CHFCl_2$, CHF_2Cl, C_2Cl_4, C_2Cl_6, C_2HCl_3.

The calcium fluoride-containing solid substance is employed in finely divided form with at least 90 percent of its weight of a size lower than 50 microns.

3,686,339

CONTINUOUS MANUFACTURE OF 1-METHYL-3-PHENYL-INDANS

Hans-Georg Schecker; Waldemar Koehler, both of Ludwigshafen; Herbert Armbrust; Hans Juergen Sturm, both of Gruenstadt, and Gerhard Kilpper, Mannheim,,all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Oct. 5, 1970, Ser. No. 78,160

Claims priority, application Germany, Oct. 7, 1969, P 19 50 434.8

Int. Cl. C07c *15/20*

U.S. Cl. 260—668 F **9 Claims**

Continuous manufacture of 1-methyl-3-phenylindans by dimerization of styrene in the presence of acid and specific concentrations of starting material and end product. The products are starting materials for the manufacture of dyes and pesticides.

3,686,340

HYDRODEALKYLATION PROCESS

Ralph E. Patrick, Flatwoods; Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, all of Ky., assignors to Ashland Oil & Refining Company, Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,737

Int. Cl. C07c *3/58, 11/04, 5/18*; C10g *23/02*

U.S. Cl. 260—672 R **4 Claims**

A novel catalyst system including an active metal oxide selected from the group consisting of noble metals and nickel; a promoter selected from the group consisting of tin and lead; if desired, a second promoter selected from the group consisting of alkali metals, such as potassium, rubidium, cesium, etc., an alkaline earth metal, such as calcium, strontium, barium, etc., and a rare earth metal, such as cerium, thorium, etc.; and an inert oxide support, such as alumina. The subject catalysts are utilized in the hydrodealkylation of alkyl aromatics, etc., in the dehydrogenation of paraffins and the like, and in the dehydrogenation-desulfurization of sulfur- and nitrogen-contaminated hydrocarbon materials.

3,686,341

PROCESS FOR AROMATIZATION OF OLEFIN HYDROCARBONS

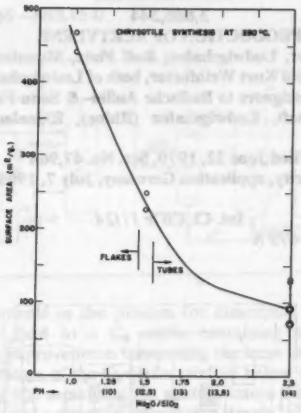
Paul E. Eberly, Jr., 9440 Ventura Dr., Baton Rouge, La.

Filed Aug. 31, 1970, Ser. No. 68,393

Int. Cl. C07c *5/26*

U.S. Cl. 260—673.5 **10 Claims**

A process for the aromatization of olefin hydrocarbons at temperatures ranging from about 300°–800° C. and pressures ranging from about atmospheric to about 150 psi, by contact with catalyst composites of new and novel forms of chrysotile,



improved in many of its physical and chemical characteristics as contrasted with previous species, and Group VIB or Group VIII transition metals.

3,686,342

AROMATIC HYDROCARBON SEPARATION BY ADSORPTION

Richard W. Neuzil, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 18, 1970, Ser. No. 73,466

Int. Cl. C07c *7/12*

U.S. Cl. 260—674 SA **28 Claims**

An improved adsorptive separation process for the separating of at least one C_8 aromatic hydrocarbon from a hydrocarbon feed containing a mixture of C_8 aromatic hydrocarbons which process employs a crystalline aluminosilicate adsorbent to selectively adsorb one C_8 aromatic from the feed. The improvement basically comprises employing a desorbent containing para-diethylbenzene to increase the selectivity of crystalline aluminosilicate for a given feed aromatic and thereby allowing a more efficient separation with a higher purity extract stream recovered from the process.

3,686,343

PARAXYLENE RECOVERY WITH ZEOLITE ADSORBENT

Roby Bearden, Jr., 505 Stanford Ave., Baton Rouge, La., and Richard J. De Feo, Jr., 1142 Ashbourne Dr., Baton Rouge, La., assignors to Esso Research and Engineering Company

Filed Oct. 1, 1970, Ser. No. 77,344

Int. Cl. C07c *7/12*; C10g *25/04*

U.S. Cl. 260—674 SA **13 Claims**

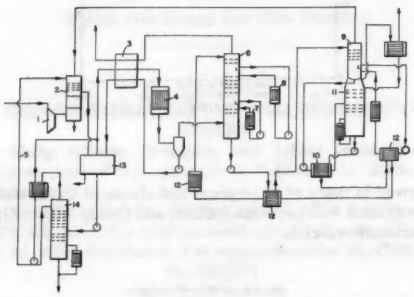
This application relates to the separation of C_8 aromatic mixtures and more particularly the separation of paraxylene from admixture with any combination of its isomers and/or ethylbenzene. The separation is accomplished by contacting a feed stream containing paraxylene and at least one other constituent selected from the group consisting of orthoxylene, metaxylene and ethylbenzene with a modified type Y zeolite

containing predominantly potassium ions and having a unit-cell size of 24.50 to 24.75 Angstroms.

3,686,344
PRODUCTION OF ACETYLENE

Erwin Brunner, Ludwigshafen; Rolf Platz, Mannheim; Kurt Taglieber, and Kurt Weinfurter, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rhineland Pfalz, Germany

Filed June 22, 1970, Ser. No. 47,964
Claims priority, application Germany, July 7, 1969, P 19 34 304.5
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 A **3 Claims**



Production of pure acetylene from a cracked gas obtained by cracking gaseous hydrocarbons, the process comprising a number of steps wherein the higher C_3 to C_5 hydrocarbons remaining in the crude acetylene are washed out with an organic solvent such as toluene.

3,686,345
CHLORINATIVE DEHYDROGENATION OF HYDROCARBONS

Delmar Frederick Lohr, Jr., Bedford Heights; Grant Crane, and Joseph A. Beckman, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 28, 1970, Ser. No. 76,240
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 XA **8 Claims**

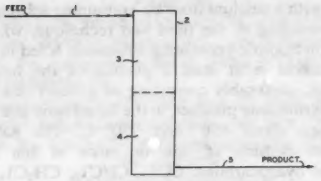
Aliphatic hydrocarbons of from four to six carbon atoms are dehydrogenated by passing the hydrocarbons and chlorine through a reaction zone containing a catalyst of iron phosphates of group IIA metals, optionally promoted with a minor amount of chromia, at a temperature of from 450° to 675° C.

3,686,346
CATALYTIC DEHYDROGENATION

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed March 5, 1970, Ser. No. 16,906
Int. Cl. C07c *5/18*
U.S. Cl. 260—680 E **11 Claims**

In a dehydrogenation process, the feed stream is successively and continuously passed through at least two Sn/O/O catalyst beds wherein the first catalyst bed is essentially free of Group *Ia* and *IIa* metals and the remaining catalyst beds con-



tain a substantial amount of Group *Ia* or *IIa* metal-containing materials. The reaction temperature is gradually increased as the amount of Group *Ia* or *IIa* metal is increased.

3,686,347
OXIDATIVE DEHYDROGENATION OF ORGANIC COMPOUNDS

Johnny C. Dean, Houston, and Philip M. Colling, Rockport, both of Tex., assignors to Petro-Tex Corporation, Houston, Tex.

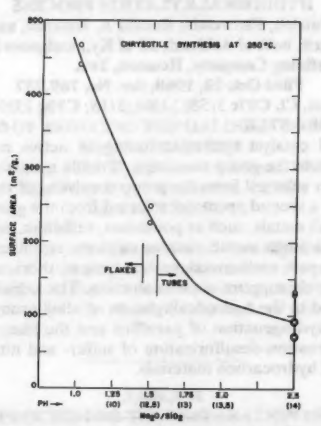
Continuation-in-part of Ser. No. 671,236, Sept. 28, 1967, Pat. No. 3,567,793. This application April 16, 1970, Ser. No. 29,291
Int. Cl. C07c *5/18*; B01j *11/22*
U.S. Cl. 260—680 E **34 Claims**

Oxidative dehydrogenation of organic compounds in vapor phase utilizing metal ferrites formed in the presence of oxygen deficient atmospheres.

3,686,348
PROCESS FOR ISOMERIZATION OF NORMAL PARAFFINIC HYDROCARBONS

Paul E. Eberly, Jr., 9440 Ventura Dr., Baton Rouge, La., assignor to Esso Research and Engineering Company

Filed Aug. 31, 1970, Ser. No. 68,394
Int. Cl. C07c *5/28*
U.S. Cl. 260—683.7 **11 Claims**



A process for the isomerization of normal paraffinic hydrocarbons, especially C_4, C_5, C_6 and C_7 hydrocarbons, at temperatures ranging from about 0°–450° C., and pressures ranging from about 0–1,000 psi, by contact with catalyst composites of aluminum halide and chrysotile, particularly, new and novel forms of chrysotile, improved in many of its physical and chemical characteristics. The catalysts can contain, in addition, components selected from metals of Groups IIIA and VIII, of the Periodic Table of the Elements.

3,686,349

PROCESS FOR RECOVERING CYCLOPENTENE, ISOPRENE AND A DIOLEFIN STREAM FROM THE C - CUT OBTAINED BY PETROLEUM CRACKING

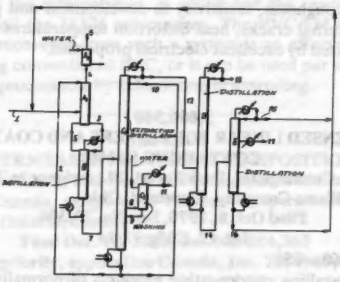
Reinhard Schliebs; Hans-Walther Brandt, both of Cologne-Flittard; Bruno Engelhard, Cologne-Stammheim; Heinrich Steude, Leverkusen; Helmut Scherb, Sinnersdorf, and Gunther Schnuchel, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen and Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

Filed Aug. 20, 1969, Ser. No. 851,661

Claims priority, application Germany, May 23, 1968, P 17 93 254.6

Int. Cl. B01d *3/40*; C07c *7/00*

U.S. Cl. 260—681.5 4 Claims



A cyclopentene rich fraction, an isoprene rich fraction, and a diolefin (essentially 1,3-pentadiene and cyclopentadiene) rich fraction are recovered from the C_5 cut obtained by petroleum cracking. First, said fractions are extracted in a liquid-liquid extraction with 1-oxo-1-methylphospholine. The extractant is then distilled to separate therefrom said fractions.

3,686,350

PROCESS FOR DIMERIZATION OR CO-DIMERIZATION OF αOLEFIN

Isao Ono; Shizuo Yamada; Hiroyuki Abe; Kazuo Tago; Nobuko Kunihiro, all of No. 4560, Oaza-Tonda, Nanyo-cho, Tasuno-gun Yamaguchi, Japan

Filed June 1, 1970, Ser. No. 42,590

Claims priority, application Japan, May 29, 1969, 44/42012; Jan. 14, 1970, 45/3990

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 13 Claims

A process in which an α-olefin is dimerized or co-dimerized in the presence of a ternary catalyst consisting of (a) an alkylaluminum compound, (b) at least one titanate selected from the group consisting of the tetra-alkyl-titanates or tetra-phenyl-titanates and (c) an organic phosphorus compound is disclosed.

3,686,351

ALPHA-OLEFIN PRODUCTION

Ronald F. Mason, Mill Valley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed July 16, 1971, Ser. No. 163,447

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 10 Claims

Ethylene is oligomerized to linear, alpha-olefins by reacting ethylene in liquid phase solution in the presence of a catalyst composition produced by contacting in the presence of ethylene (1) a simple divalent nickel salt (2) a boron hydride reducing agent (3) a phosphinooacetic acid or alkali metal salt thereof.

3,686,352

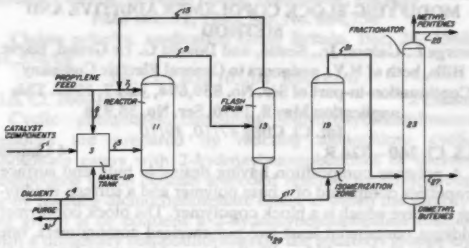
DIMERIZATION PROCESS

Arthur H. Neal, 1215 Park St., Baytown, Tex., and Paul T. Parker, 1762 Longwood Dr., Baton Rouge, La.

Filed Feb. 18, 1970, Ser. No. 12,381

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 5 Claims



Improvements in the process for dimerizing a propylene containing fluid to a C_6 olefin containing mixture, said processing improvements comprising the steps of maintaining the temperature of the C_6 olefin mixture below 100° F. while isomerizing and separating the mixture into a methyl pentene rich stream and a dimethyl butene rich stream, after which the catalyst is recycled to the dimerization zone in an active condition. Such improvements permit the processing to be carried out in a more efficient and economical manner than heretofore thought possible.

3,686,353

CATALYTIC DIMERIZATION OF OLEFINS WITH COBALT COMPLEXES

Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company

Filed June 18, 1970, Ser. No. 47,633

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 D 7 Claims

A catalytic process for the dimerization of olefins utilizing a cobalt(II) complex activated by the presence of an alkylaluminum halide. Propylene is dimerized with a catalyst prepared by mixing bis(quinoline)dibromocobalt(II) and ethylaluminum dichloride in chlorobenzene.

3,686,354

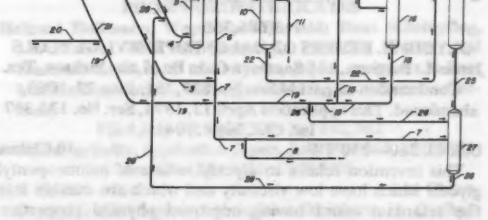
HIGH OCTANE PARAFFINIC MOTOR FUEL PRODUCTION

George L. Hervert, Woodstock, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 4, 1971, Ser. No. 112,645

Int. Cl. C07c *3/52*, *3/54*, *9/14*

U.S. Cl. 260—683.43 13 Claims



High octane paraffinic motor fuel is produced by a combination of alkylating isobutane and a C_4 mono-olefin,

separating the alkylate into distinct high octane and low octane fractions, and disproportionating the low octane fraction with isobutane and alkylation catalyst to increase its octane number.

3,686,355

SHAPED COMPOSITION OF POLYMER AND SURFACE MODIFYING BLOCK COPOLYMER ADDITIVE AND METHOD

George L. Gaines, Jr., Scotia, and Donald G. Le Grand, Burnt Hills, both of N.Y., assignors to General Electric Company

Continuation-in-part of Ser. No. 839,694, July 7, 1969. This application May 8, 1970, Ser. No. 35,916

Int. Cl. C08g *47/10, 39/10*

U.S. Cl. 260—824 R **4 Claims**

A polymer composition having desirable bulk and surface properties comprised of a base polymer and a surface-modifying additive which is a block copolymer. The block copolymer additive contains at least two polymerized comonomers, one of which is compatible with the base polymer and serves to distribute the additive therein, and the second of which is sufficiently surface-active in the base polymer to impart or modify a surface property thereof.

3,686,356

METHOD OF BLENDING POLYORGANOSILOXANE AND ORGANIC VINYLIC THERMOPLASTICS AND PRODUCTS THEREOF

John C. Saam, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 805,844, March 10, 1969. This application Aug. 25, 1970, Ser. No. 66,895

Int. Cl. C08g *47/10*

U.S. Cl. 260—825 **7 Claims**

A method of blending organic vinylic thermoplastics and polyorganosiloxanes by combining with a copolymer having polyorganosiloxane segments and organic vinylic polymer segments provides a homogeneous dispersion. This gives improved properties of the organic vinylic thermoplastic, such as tensile strength, impact strength, processability, and flow properties.

3,686,357

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER STOCKS

Carl Anthony Cheeseman, c/o Midland Silicones Limited, Reading, England

Filed Nov. 19, 1970, Ser. No. 91,225

Claims priority, application Great Britain, Nov. 28, 1969, 58,320/69

Int. Cl. C08g *47/02, 47/06*

U.S. Cl. 260—825 **8 Claims**

A silicone rubber stock which cures at room temperature under the influence of water and exhibits improved adhesion to substrates, particularly metals, is prepared by mixing a polyalkoxysilyl endblocked diorganosiloxane with a liquid siloxane containing amino or polyamino groups bonded to silicon and a curing catalyst.

3,686,358

GLYCIDYL ETHERS OF HALONEOPENTYL GLYCOLS

James L. Bertram, 115 Southern Oaks Dr., Lake Jackson, Tex.

Continuation-in-part of Ser. No. 837,351, June 27, 1969, abandoned. This application April 12, 1971, Ser. No. 133,397

Int. Cl. C08g *45/04*

U.S. Cl. 260—830 TW **10 Claims**

This invention relates to glycidyl ethers of haloneopentyl glycols which have low viscosity and which are curable into fire retardant resins having improved physical properties. These glycidyl ethers are prepared by reacting a haloneopentyl glycol with an epihalohydrin in the presence of a Lewis acid catalyst and reacting such reaction product with a strong base to produce terminal epoxidation.

3,686,359

CURABLE POLYEPOXIDE COMPOSITIONS

Anthony C. Soldatos, Kendall Park, and Allison S. Burhans, West Millington, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 19, 1969, Ser. No. 886,781

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **19 Claims**

This application relates to curable compositions, based on cycloaliphatic epoxides in admixture with epoxy hardeners and polymers of butadiene, which can be cast into articles of desired configuration or used as binders in the preparation of laminates, and cured at elevated temperatures to form articles characterized by excellent physical properties such as tensile strength, toughness, resistivity to development and propagation of internal cracks, heat distortion temperatures and also characterized by excellent electrical properties.

3,686,360

CONDENSED LINEAR POLYESTERS AND COATINGS CONTAINING SAME

Arthur L. Cunningham, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Oct. 8, 1970, Ser. No. 79,304

Int. Cl. C08g *37/34*

U.S. Cl. 260—850 **9 Claims**

Noncrystalline condensation products of normally crystalline linear polyesters having hydroxyl functionality with alkylated alkylol amines or amides are provided, as well as coating compositions containing such condensation products.

3,686,361

TEREPHTHALIC ACID/1,2-PROPYLENE GLYCOL POLYESTER MODIFIERS FOR POLYVINYL CHLORIDE COMPOSITIONS

Walter Groesbeck De Witt, III, 1182 Strathmann Dr., Southampton, Pa., and Marvin Joseph Hurwitz, 8267 Thomson Rd., Elkins Park, Pa.

Filed April 15, 1969, Ser. No. 816,419

Int. Cl. C08f *29/24*; C08g *17/06, 39/10*

U.S. Cl. 260—873 **8 Claims**

Plastic compositions based on poly(alkylene terephthalates), in particular poly(1,2-propylene terephthalate) polyesters intermixed in polyvinyl chloride compositions, are provided. The compositions of this invention provide improved processing characteristics with reduced melt viscosity and improved physical and mechanical properties such as tensile properties and weathering resistance.

3,686,362

FLAME RESISTANT COMPOSITION OF ABS, POLYARYLENE POLYSULFONE AND BROMO-ARYL COMPOUND

Paul D. Hinckley, Woodbury; Gerald J. Klender, Naugatuck, both of Conn., and Jerry F. Lambiotte, Westland, Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 22, 1970, Ser. No. 39,631

Int. Cl. C08f *41/12, 45/58*

U.S. Cl. 260—876 R **21 Claims**

Thermoplastic blend of ABS, polyarylene poly-sulfone resin [e.g. condensation product of the dipotassium salt of 2,2-bis-(4-hydroxyphenyl) propane and 4,4'-dichlorodiphenyl-sulfone], and bromo-aryl compound (hexabromobenzene or hexabromodiphenylether), with or without antimony oxide, is self-extinguishing, has high heat distortion temperature, and good processing characteristics.

3,686,363
POLYVINYL CHLORIDE-POLYMETHACRYLONITRILE INTERPOLYMER PROCESSING AIR FOR POLYVINYL CHLORIDE

Arthur J. Yu, Stamford, Conn., and Paul Kraft, Spring Valley, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,326
Int. Cl. C08f *29/24, 29/56*
U.S. Cl. 260—876 R **11 Claims**

Interpolymers especially useful as processing aids for polyvinyl chloride (PVC) are prepared by polymerizing vinyl chloride in the presence of polymethacrylonitrile (PMAN) or by polymerizing methacrylonitrile in the presence of polyvinyl chloride. In a preferred method, a conventional PVC polymerization is halted at or near its completion, unreacted monomer is removed, a minor proportion up to about 50 percent of methacrylonitrile (MAN) monomer, based on the weight of the interpolymer, is added and the reaction continued until the MAN polymerizes. The PVC-PMAN interpolymer recovered from such a system is an effective aid in processing conventional PVC, or it can be used per se since it is readily processable by calendering or extruding.

3,686,364
IMPERMEABLE POLYMERIC COMPOSITIONS

Keith J. Robinson, and Heinz A. Pfisterer, both of Sarnia, Ontario, Canada, assignors to Polymer Corporation Limited, Sarnia, Ontario, Canada

Filed Dec. 11, 1969, Ser. No. 884,365
Claims priority, application Canada, Jan. 28, 1969, 041,284
Int. Cl. C08f *29/12, 33/08*
U.S. Cl. 260—876 B **10 Claims**

A mouldable blend of a thermoplastic elastomeric block copolymer, an elastomeric isobutylene polymer and optionally, a resinous polymer of monoalkenyl aromatic hydrocarbon is used in the manufacture of moulded soft rubber goods, e.g., pharmaceutical enclosures.

3,686,365
BLOCK COPOLYMER COMPOSITIONS

Robert M. Sequeira, 1007 Radcliffe Dr., Davis, Calif.

Filed Nov. 16, 1970, Ser. No. 90,121
Int. Cl. C08f *29/12, 33/08*
U.S. Cl. 260—876 B **9 Claims**

Polymeric compositions having improved environmental resistance comprising

a. about 80 to 90 percent of block copolymers having at least two mono alpha alkenyl arene polymer blocks and at least one conjugated diene polymer block and

b. about 20 to 1 percent of a selectively hydrogenated block copolymer having, prior to hydrogenation, at least one mono alpha alkenyl arene polymer block and at least one conjugated diene polymer block, said block copolymer having been selectively hydrogenated to saturate at least 80 percent of the olefinic double bonds and 0 to 25 percent of the aromatic double bonds. The compositions are thermoplastic elastomers.

3,686,366
HYDROHALOGENATED SELECTIVELY HYDROGENATED BLOCK COPOLYMERS

Deloss E. Winkler, 133 Lombardy Lane, Orinda, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed July 22, 1970, Ser. No. 57,364
Int. Cl. C08f *19/08, 27/02, 27/25*
U.S. Cl. 260—880 B **7 Claims**

Block copolymers of improved fire resistance are provided by block polymerizing a monovinyl arene with butadiene, the butadiene polymer block containing between about 20 percent and about 60 percent 1,2 microstructure, then selectively partially hydrogenating so as to eliminate at least about 50 percent of the 1,2 unsaturation and no more than about 50 percent of the 1,4 unsaturation and thereafter reacting substantially completely with a hydrogen halide. The monovinyl arene polymer blocks are essentially unreactive toward hydrogen or hydrogen halide under the conditions used.

3,686,367
3-HYDROXY-4-BENZOYPHENYL CYCLIC PHOSPHATES

Ronald Cowling, Hexagon House, Manchester, England

Filed Dec. 12, 1969, Ser. No. 884,736
Claims priority, application Great Britain, Dec. 24, 1968, 61,374/68
Int. Cl. C07d *105/04*; B01j *1/16*
U.S. Cl. 260—937 **2 Claims**

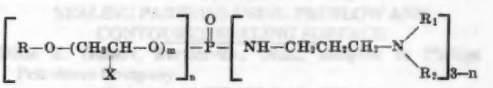
Cyclic phosphates containing 2-hydroxybenzophenone residues are prepared by reacting monochloro cyclic phosphate esters with 2-hydroxybenzophenones or derived compounds which contain a second reactive hydroxyl group or by reacting dichlorophosphate esters in which the esterifying group is or contains a 2-hydroxybenzophenone residue with a dihydroxy compound wherein the hydroxyl groups are so positioned that a cyclic phosphate ester is formed. The cyclic phosphate esters are stabilizers for organic materials, especially polymers, against degradation by heat, light or oxidation.

3,686,368
PHOSPHONAMIDE ANTISTATIC AGENTS

Fred S. Eiseman, Jr., Maplewood; Leslie Millard Schenck, Mountainside, both of N.J., and John P. G. Beiswanger, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,519
Int. Cl. C07f *9/22, 9/24*
U.S. Cl. 260—945 **8 Claims**

New phosphonamides with antistatic properties are provided. The phosphonamides are represented by the formula:



wherein R is an alkyl or alkaryl radical, X is hydrogen, methyl or ethyl, R_1 and R_2 are individually either alkyl or hydroxyalkyl, *m* is an integer and n is either 1 or 2. Typically, the compounds of the invention are applied by dipping an article such as a fiber to be coated, into a solution of the phosphonamide in a suitable solvent. A representative antistatic agent of the present invention is prepared by the stepwise reaction of phosphorus oxychloride with an ethoxylated higher straight chain primary alcohol mixture and N,N-dimethylpropylenediamine in sufficient quantities to fully replace all the chlorine.

3,686,369
O-ALKYL-S-ALKYL-S-PHENYL-PHOSPHORODITHIOLATES

Hellmut Hoffmann, Wuppertal-Elberfeld; Hans Scheinpflug, Leverkusen, both of Germany; Toyohiko Kume, and Kazuomi Yasui, both of Tokyo-to, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 17, 1969, Ser. No. 842,702
Claims priority, application Japan, July 19, 1968, 43/50851
Int. Cl. A01n *9/36*; C07f *9/08*
U.S. Cl. 260—964 **11 Claims**

O-alkyl-S-alkyl-S-phenyl-phosphorodithiolates, i.e. O-alkyl-S-alkyl-S-(optionally chloro and methyl -substituted)- phenyl--phosphorodithiolates or -dithiolphosphates, which possess

fungicidal properties and which may be produced by conventional methods.

3,686,370

Patent Not Issued For This Number

3,686,371

METHOD FOR PRODUCING COPOLYMERIZABLE COMPOUND CONTAINING FUNCTIONAL GROUP OF PHOSPHORIC ACID

Tadashi Hasegawa, 5-14, Kiyosu, Sagiyama, Gifu, Japan

Filed May 22, 1969, Ser. No. 827,067
Int. Cl. C07f 9/08
U.S. Cl. 260—980 3 Claims

A copolymerizable monomer containing a functional group of a phosphoric acid is prepared by reacting a monomeric compound containing a hydroxyl radical and an unsaturated double bond with phosphorus pentaoxide by dropping 1 mole of phosphorus pentaoxide into at least 1.8 moles of the monomeric compound at a liquid temperature from 20° to 100°C and then adding at least 1 mole of water.

3,686,372

METHOD FOR MAKING CEMENT

John C. Hiatt, Brandon, Fla., and John P. Luker, Houston, Tex., assignors to General Portland Cement Co., Dallas, Tex.

Filed Sept. 16, 1970, Ser. No. 72,880
Int. Cl. C04b 7/38
U.S. Cl. 263—53 R 29 Claims

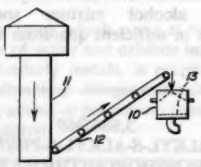
In the process for making cement, especially Portland cement, the degree of grinding required for the calcareous reactant material can be decreased by using aragonite, a calcium carbonate bearing mineral.

3,686,373

UREA-PRILL ANTI-CAKING PROCESS

George T. Griesheimer, 4961 Normandy Ave., Memphis, Tenn., and Joe I. Chance, 4142 Fanon Ave., Memphis, Tenn.

Filed Feb. 9, 1970, Ser. No. 9,835
Int. Cl. B01j 2/04
U.S. Cl. 264—14 9 Claims



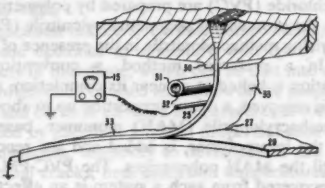
Hot urea prills can be made to resist caking by cooling them quickly under quiescent conditions. To accomplish this, the hot prills are collected in a cooling chamber and a flow of air at a temperature not exceeding about 130° F is directed through the prills so that the prill temperature is quickly reduced. Throughout the cooling step the prills are maintained in a quiescent state so that a glassy surface is maintained on each prill. Such surface helps reduce subsequent caking.

3,686,374

GAS ASSISTED ELECTROSTATIC PINNING

William E. Hawkins, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 823,847, May 12, 1969, abandoned. This application March 23, 1970, Ser. No. 21,696. The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. B29f 3/08; B29d 7/02
U.S. Cl. 264—22 11 Claims



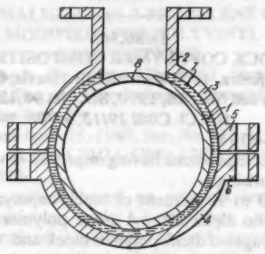
In the electrostatic pinning of dielectric film onto a moving surface, the improvement comprising surrounding the electrostatic source with a gas in which a specific minimum current can be generated.

3,686,375

METHOD OF SEALING OR JOINTING

Alan Frank Hall, Stockton-on-tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 11, 1970, Ser. No. 36,004
Claims priority, application Great Britain, May 27, 1969, 26,661/69
Int. Cl. E04b 1/16; B32b 35/00
U.S. Cl. 264—32 6 Claims



A method of effecting a seal in a system operating under pressure, e.g., a pipeline carrying ethylene at high pressure, wherein the appropriate part of the system is surrounded with a rigid shell containing material, e.g., a synthetic resin, which is allowed to set to form bonds with the shell and the appropriate part of the system capable of withstanding the internal pressure of the system. The method may be used to joint pipes onto pipelines by a modification of the "hot-tapping" technique.

3,686,376

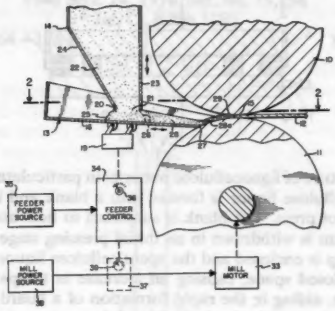
METHOD AND MEANS FOR CONVERTING METAL POWDERS TO CONTINUOUS STRIP FORM

Maurice Donald Ayers, Stamford, Conn., assignor to Metal Innovations, Inc., Stamford, Conn.

Filed May 15, 1970, Ser. No. 37,748
Int. Cl. B22f 3/18
U.S. Cl. 264—40 6 Claims

The invention is directed to a new method for converting powdered metals to strip form on a continuous basis, which is productive of commercially acceptable levels of strip

uniformity in respect of such characteristics as strip thickness, density, edge conditions, metallurgical characteristics, etc. The invention is especially applicable to, although by no means limited to, the processing into continuous strip form of water-atomized ferrous powders. In the new process, metal powder is controllably fed over a generally horizontal delivery surface in a strip-like layer. The feeding facility is an asymmetrically vibrating unit which advances the strip-like powder layer in the feeding direction while simultaneously vibrating it. During the vibratory feeding step, the powder is consolidated,



and gases are dispelled from the powder layer, to facilitate subsequent compacting. The rate of vibratory advancement of the strip-like layer of powder is maintained below over-saturation or flooding rates for the rolling mill i.e., does not exceed the capacity of the rolls, at a given setting, to roll the powder so there is no significant accumulation of powder at the roller nip. The rate is controlled as an inverse function of the power load on the compacting rolls, so that the input to the compacting rolls is adjustable to a level which will result in a substantially continuously uniform output from the discharge side of the compacting rolls.

3,686,377

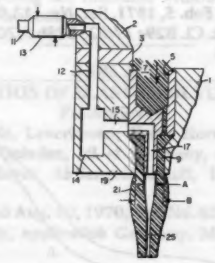
METHOD AND APPARATUS FOR MELT-SPINNING HOLLOW FIBERS

Richard Young Hays, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 1, 1971, Ser. No. 119,744

Int. Cl. B29c *17/06*; B29d *23/04*

U.S. Cl. 264—40 **2 Claims**



A process and apparatus are disclosed for melt-spinning hollow fibers under precisely controlled pressure conditions to provide more uniform properties for reverse-osmosis separation.

3,686,378

IMPROVED SEPARATION OF THE DEPOSITION MANDREL FROM A VAPOR PHASE DEPOSITED SEMICONDUCTOR BODY

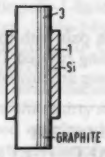
Wolfgang Dietze, Hanauerste. 119, 8 Munich 50, Germany

Filed July 27, 1970, Ser. No. 58,458

Claims priority, application Germany, Aug. 26, 1969, P 19 43 359.1

Int. Cl. B01j *17/28*; B29c *13/04*

U.S. Cl. 264—81 **3 Claims**



An at least unilaterally open, hollow body of semiconductor material, such as a tubular or cup-shaped body for example, is produced by precipitating the semiconductor material from a gaseous phase upon a heatable carrier consisting of a different material whose thermal coefficient of expansion is greater than that of the semiconductor material. During the process the carrier is heated to a temperature at which the difference in thermal expansion causes fissures or cracks to appear in the precipitated semiconductor material. Thereafter the precipitation of semiconductor material is continued until the cracks are closed by the further growth of precipitating semiconductor material. Ultimately the carrier is removed by pulling or dropping it out of the resulting cooled semiconductor body.

3,686,379

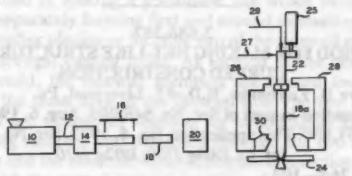
SEALING PARISONS USING PREBLOW AND CONTOURED SEALING SURFACE

Dixie E. Gilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 18, 1969, Ser. No. 850,804

Int. Cl. B29c *17/07, 17/08*

U.S. Cl. 264—89 **6 Claims**



An open end parison preform is stretched longitudinally, expanded slightly with preblow fluid, and pinched shut with a contoured sealing member to form a bead along the sealing seam.

3,686,380

METHOD FOR MAKING NET STRUCTURES

Theodore H. Fairbanks, R.D. 1, Liverpool, Pa.

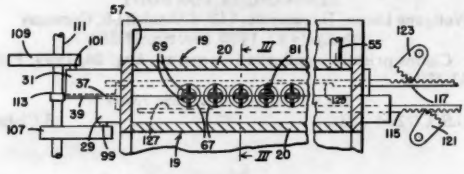
Continuation-in-part of Ser. No. 849,947, Aug. 12, 1969, Pat. No. 3,591,896. This application Nov. 18, 1970, Ser. No. 90,674

Int. Cl. D04g *1/00*; D02g *1/20*

U.S. Cl. 264—103 **6 Claims**

A method of making a net-like structure wherein groups of strands of paired groups of strands are periodically shifted to

provide different pairs of such groups. Alternately with such shifting, each paired group of strands is rotated about an axis



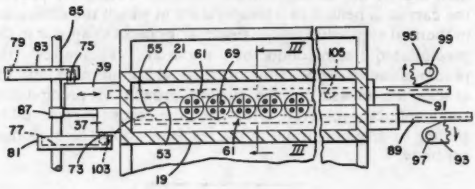
between the groups of such pair with the strand in each such group nearest such axis being rotated 180° while the remaining strands in each such group are turned through 360°.

3,686,381

METHOD FOR MAKING NET STRUCTURES

Theodore H. Fairbanks, R.D. #1, Liverpool, Pa.

Continuation-in-part of Ser. No. 849,805, Aug. 12, 1969, Pat. No. 3,591,892. This application Jan. 5, 1971, Ser. No. 104,036
Int. Cl. D04g *1/00*; D02g *1/20*
U.S. Cl. 264—103 8 Claims



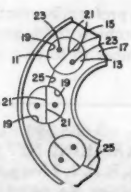
A method of making a net-like structure wherein groups of strands of paired groups of strands are periodically shifted to provide different pairs of such groups. Alternately with such shifting, each paired group of strands are rotated about an axis between the groups of such pair with some but less than all of the strands from each such group being rotated through an angle which is greater than 180° but less than 360° or multiple of such angle.

3,686,382

METHOD FOR MAKING NET-LIKE STRUCTURES OF CURVED CONSTRUCTION

Theodore H. Fairbanks, R.D. #1, Liverpool, Pa.

Continuation-in-part of Ser. No. 848,009, Aug. 6, 1969, Pat. No. 3,601,850. This application Jan. 5, 1971, Ser. No. 104,088
Int. Cl. D04g *1/00*; D02g *1/20*
U.S. Cl. 264—103 3 Claims



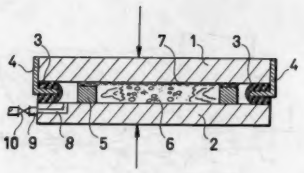
Method for making net-like structures of curved construction in which composite extrusion nozzles are each turned through an angle of 180° alternately with relative movement between nozzle sections along arcuate paths extending about a common center.

3,686,383

METHOD FOR HOT-PRESSING SHEETS OF SUBSTANCES CONTAINING LIGNOCELLULOSE

Alpo Eino Makinen, Turku, Finland, assignor to Insinooritoimisto Alpo Makinen & Co., Turku, Finland

Filed Nov. 17, 1969, Ser. No. 877,687
Claims priority, application Finland, Nov. 18, 1968, 3296/68
Int. Cl. B29j *5/00*
U.S. Cl. 264—120 1 Claim



A mixture of lignocellulose material in particulate form with spent cellulose liquor is formed into a blank and introduced into a hot press. The blank is subjected to heat and pressure and steam is withdrawn in an initial pressing stage. Then the press gap is enclosed and the spent cellulose liquor gasifies in the enclosed space, causing an increase in temperature and pressure, aiding in the rapid formation of a board. After the pressure has reached a desired level the pressure is controlled by venting any excess gas. The pressing is done in one press and treatment time is greatly reduced in comparison with prior processes.

3,686,384

METHOD OF PRODUCING MOLDED ARTICLES FROM COFFEE BEAN HULLS

Leslie A. Runton, Canton, Mass., assignor to Industrial de Cascarillas-Ciscana S.A., Colombia

Filed Jan. 22, 1970, Ser. No. 5,115
Int. Cl. C08h *5/04*
U.S. Cl. 264—122 3 Claims

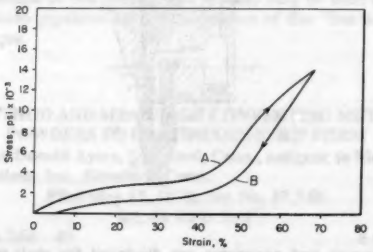
The method of producing molded articles from coffee bean hulls or from rice hulls or from mixtures thereof in which the hulls are grounds dehydrated and molded at a temperature of from 450° to 500° F. and at pressures of from ½ to 10 tons per square inch, whereby the resin component flows to form a resin based molded rigid article.

3,686,385

FORMATION OF ELASTIC AND HIGH-TENACITY FIBERS FROM BUTENE-1 HOMOPOLYMERS AND COPOLYMERS

Charles L. Rohn, Somerville, N.J., assignor to Mobil Oil Corporation

Filed Feb. 5, 1971, Ser. No. 112,990
Int. Cl. B29c *17/02*; B28b *3/20*
U.S. Cl. 264—164 3 Claims



Fibers having properties of high elasticity or high tenacity are formed by drawing from the melt polybutene-1 or a

copolymer of butene-1 with up to 20 mole per cent propylene or ethylene and converting the drawn fiber to crystalline Form I, in the case of elastic fibers. The degree of elasticity or tenacity depends upon the draw down ratio and the crystallinity of the polymer used, and, in the case of high tenacity fibers, the melt temperature at the die orifice.

3,686,386

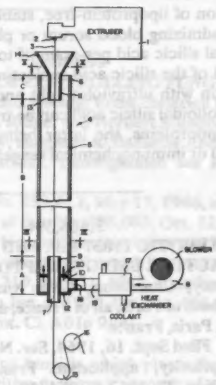
MULTIFILAMENT EXTRUSION METHOD AND APPARATUS

Ronnie A. Arav, Netania, Israel, and Gianpietro Trentini, Pinerolo, Italy, assignors to Beloit Corporation, Beloit, Wis.

Filed Sept. 24, 1970, Ser. No. 75,156

Int. Cl. B28b *3/20*

U.S. Cl. 264—176 F **12 Claims**



Apparatus for producing a multifilament strand wherein the strand is extruded downwardly in heat exchange relationship with a gas is improved according to the present invention by providing the gas as an upwardly flowing annular gas flow surrounding the downwardly flowing filaments. The gas is conducted upwardly parallel to the filaments and thus does not impinge laterally upon the filaments. The extruded filaments entrap ambient air which tends to remain entrained in the downwardly moving strand. The upwardly flowing annular gas stream tends to pull this entrained gas out of the downwardly moving filament thus effectively cooling the filament without causing adjacent strands to impinge upon one another. In this manner, the capacity of the apparatus is increased substantially. Fibers such as polypropylene can be melt spun according to the present invention by passing the molten extruded fibers downwardly inside an annular upwardly flowing heat exchange gas stream. As mentioned, this tends to remove entrained air from the downwardly moving filaments thus effectively rapidly cooling the filaments without causing them to impinge upon one another.

3,686,387

PRODUCTION OF ELASTIC POLYURETHANE FILAMENTS

Wolfgang Keberle, Leverkusen; Heinz Hornig, Cologne, and Gustav Sinn, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 10, 1970, Ser. No. 62,644

Claims priority, application Germany, March 10, 1967, F 51780

Int. Cl. D01f *7/00*

U.S. Cl. 264—184 **12 Claims**

Elastic filaments are prepared from emulsifier-free dispersions of segmented polyurethane polymers containing salt groups by spinning the dispersions into aqueous precipitation baths.

3,686,388

METHOD FOR PREPARING DIMENSIONALLY STABLE ARTICLES OF POLYBUTENE-1

Gunter Beckmann, and Hans-Ulrich Finkmann, both of Marl, Germany, assignors to Chemische Werke Huels A.G., Marl, Germany

Filed Dec. 9, 1968, Ser. No. 782,410

Claims priority, application Germany, Dec. 22, 1967, P 16 79 981.8

Int. Cl. B29c *17/02, 25/00;* C08f *3/12*

U.S. Cl. 264—237 **10 Claims**

Dimensionally stable articles of poly-1-butene making at least 70% isotactic structure formed by:

a. preparing isotactic poly-1-butene from 1-butene;
b. forming molten poly-1-butene into semi-finished products at about 200-280° C and permitting the semi-finished products to cool;
c. cold forming the semi-finished products at below 80° C into final shapes within thirty minutes of cooling; and
d. storing the shaped articles about 0.5 to 12 hours while avoiding the effects of larger forces on the articles.

3,686,389

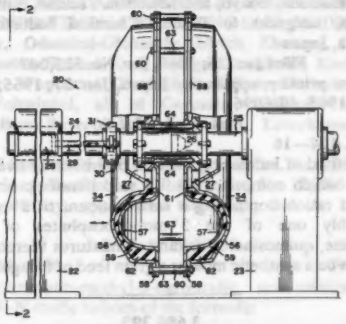
METHOD OF MAKING A PNEUMATIC TIRE

Heinz Wilhelm Beneze, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 20, 1970, Ser. No. 39,948

Int. Cl. B29h *17/00*

U.S. Cl. 264—250 **2 Claims**



A method of making a pneumatic tire which includes the steps of separately forming first and second sidewall members and thereafter placing or locating two of the sidewall members in a centrifugal casting mold. As located in the centrifugal casting mold, the sidewall members are spaced from each other in the tread area of the finished tire. The two sidewall members are connected together by centrifugally casting a connecting material into the space between the two sidewall members and the material which forms the connection is compatible with the material of construction of the sidewall members.

3,686,390

Patent Not Issued For This Number

3,686,391

METHOD OF CENTERING TIRE CARCASS IN MOLD

Vaughn Rawls, Lima, Ohio, assignor to National-Standard Company, Niles, Mich.

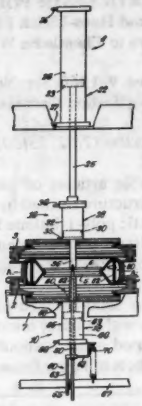
Division of Ser. No. 702,224, Feb. 1, 1968, Pat. No. 3,590,433. This application Oct. 12, 1970, Ser. No. 79,917

Int. Cl. B29h *5/04*

U.S. Cl. 264—315 **3 Claims**

Method of centering a tire carcass in a tire vulcanizing mold including the steps of inflating the air bag contained in the tire

carcass prior to lowering the carcass into the mold and thereafter moving opposed tire beads conjointly and



uniformly relative to each other to cause the tire beads and tire carcass to be in centered relation with respect to the mold.

3,686,392

NUTRIENT RATION FOR INCREASING GROWTH OF LIVESTOCK AND POULTRY

Yoshio Hamada, Tokyo, and Motohisa Yoshino, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 26, 1966, Ser. No. 523,047

Claims priority, application Japan, Jan. 27, 1965, 45/4763; Feb. 3, 1965, 40/6096

Int. Cl. A23k *1/00*

U.S. Cl. 424—16 **10 Claims**

A method of increasing the rate of growth of livestock and poultry which comprises feeding said livestock or poultry a nutrient ration containing a small amount of 5'-nucleotide, preferably one of the 5'-monophosphates of cytidine, adenosine, quanosine or uridine or mixtures thereof. The ration can be a synthetic milk or a grain feed or forage.

3,686,393

METHOD FOR INHIBITING DENTAL PLAQUE

Harold Boyd Woodruff, Watchung, and Thomas H. Stoudt, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 838,864, July 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 701,875, Jan. 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 656,671, July 28, 1967, abandoned. This application Feb. 12, 1970, Ser. No. 10,983

Int. Cl. A61r *7/16*

U.S. Cl. 424—50 **5 Claims**

The enzyme dextranase is applied to the teeth and gums to eliminate or suppress plaque formation.

3,686,394

ATTENUATED LIVE RUBELLA VIRUS VACCINE AND METHOD OF PRODUCTION

Constant Huygelen, Vossekoten, Huldenberg, and Julien Peetermans, 6, Avenue J. Herman, Rixensart, both of Belgium

Filed Oct. 11, 1967, Ser. No. 674,650

Claims priority, application Great Britain, Oct. 21, 1966, 47,399/66

Int. Cl. C12k *5/00, 7/00*

U.S. Cl. 424—89 **10 Claims**

Rubella virus is passaged in primary rabbit kidney tissue at least 15 times, preferably 51–61 times, at temperatures of 28°–36° C, to obtain an effective vaccine. Test data are disclosed.

3,686,395

PROCESS FOR PREPARATION OF STORAGE STABLE HEPATITIS-FREE SERUM

Wolfgang Stephan, Gartenstr. 186, Neuisenberg, Germany, assignor to Biotest Serum Institut GmbH, Frankfurt Main-Niedeurad, Germany

Continuation-in-part of Ser. No. 627,625, April 3, 1967, abandoned. This application Oct. 7, 1970, Ser. No. 78,949

Claims priority, application Germany, April 6, 1966, B 86560; Nov. 6, 1966, B 89704; Feb. 2, 1967, B 91011

Int. Cl. A61k *23/02, 27/10*

U.S. Cl. 424—101 **8 Claims**

Preparation of lipoprotein-free, stable and sterile serum by intimately admixing blood serum or plasma with 250 to 500 mg. colloidal silicic acid per gram of total protein and following removal of the silicic acid subjecting the serum or plasma to irradiation with ultraviolet light and sterile filtration. The separated colloidal silicic acid can be treated for elution of the adsorbed lipoproteins, the latter being suitable for use as a biochemical or immunochemical reagent.

3,686,396

THE ANTIBIOTIC 11837 R.P. AND PROCESS FOR ITS MANUFACTURE USING STREPTOMYCES VIRIDANS

Denise Mancy, Charenton; Leon Ninet, and Jean Preud'Homme, both of Paris, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Sept. 16, 1964, Ser. No. 399,129

Claims priority, application France, Sept. 19, 1963, 63948030; Nov. 22, 1963, 63954708

Int. Cl. A61k *21/00*

U.S. Cl. 424—118 **18 Claims**

The invention provides the new antibiotic 11837 R.P., which is useful in treating infections caused by Gram-positive microorganisms, and its production by fermentation using the newly discovered microorganism *Streptomyces viridans* (NRRL) 3087).

3,686,397

PARENTERAL IRON PREPARATIONS

Arthur Muller, 100 B, St. Georgenstrasse, St. Gallen, Switzerland

Continuation of Ser. No. 716,638, March 27, 1968, abandoned, which is a continuation-in-part of Ser. No. 447,946, April 14, 1965, abandoned. This application May 18, 1970, Ser. No. 37,474

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **4 Claims**

Novel, therapeutically-useful trivalent iron complexes electrophoretically exhibiting a homogeneous negative charge may be prepared by treating reactive trivalent iron with a complex forming agent consisting of sorbitol, gluconic acid and certain oligosaccharides in particular proportions and amounts.

3,686,398

10,9-BOROXAROPHENANTHRENE AS FUNGICIDES

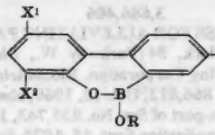
Gustave K. Kohn, Berkeley, Calif., and Randolph J. McMurtry, Denver, Colo., assignors to Research Company Chevron, San Francisco, Calif.

Filed July 20, 1970, Ser. No. 56,693

Int. Cl. A01n *9/00*

U.S. Cl. 424—185 **6 Claims**

Control of fungi by using a composition comprising a compound of the formula



wherein X^1, X^2 and X^3 are hydrogen, halogen of atomic number 9 to 35 (fluorine, chlorine or bromine) or hydrocarbon carboxyacyl of one to five carbon atoms and R is hydrogen, aliphatic hydrocarbon group of one to five carbon atoms or aliphatic hydrocarbon group of 1 to 6 carbon atoms substituted one to four hydroxy groups or halogens of atomic number 17 to 35.

3,686,399
METHOD OF CONTROLLING FUNGI

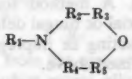
Walter Sanne; Karl-Heinz Koenig; Ernst-Heinrich Pommer, all of Ludwigshafen am Rhine, and Herbert Stummeyer, Mannheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Continuation of Ser. No. 550,612, May 17, 1966, abandoned, which is a division of Ser. No. 498,083, Oct. 12, 1965, abandoned, which is a continuation-in-part of Ser. No. 227,697, Oct. 2, 1962, abandoned, which is a continuation-in-part of Ser. No. 174,719, Feb. 21, 1962, abandoned. This application Jan. 5, 1970, Ser. No. 499

Int. Cl. A01n 9/00

U.S. Cl. 424—248 **5 Claims**

Process for controlling fungi in which plants that are to be protected are treated with a fungitoxic amount of a compound having the formula



in which R_1 denotes a member selected from the group consisting of tridecyl and cycloalkyl with from six to 12 carbon atoms as ring members and in which R_2, R_3, R_4 and R_5 denote a member selected from the group consisting of methylene and substituted methylene with at least one of the groups R_2, R_3, R_4 and R_5 being a substituted methylene group in which the substituents are members selected from the group consisting of methyl and ethyl, the said substituents occurring once or twice in each substituted methylene group.

3,686,400
PHARMACEUTICAL COMPOSITIONS CONTAINING AND METHODS OF USING -2-AMINO-3-CARBAMIDO QUINOXALINE-DI-N-OXIDES

Florin Seng, Odenthal, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

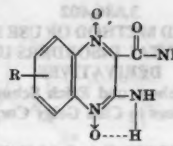
Division of Ser. No. 742,168, July 3, 1968, Pat. No. 3,609,151. This application Jan. 29, 1970, Ser. No. 12,530

Claims priority, application Germany, July 26, 1967, F 53057

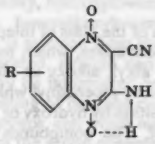
Int. Cl. A61k 27/00

U.S. Cl. 424—250 **10 Claims**

2-Amino-3-carbamido-quinoxaline-di-N-oxides of the formula



are produced by hydrolising the corresponding 2-amino-3-cyanoquinoxaline-di-N-oxides of the formula



in an acidic solution wherein R is hydrogen, halogen, lower alkyl or lower alkoxy. The compounds are useful in treatment of infections from gram positive and gram negative bacteria and are administered in the general range of 25 mg/kg orally or parenterally.

3,686,401
2-ISOTHIOURONIUM-METHYL-3-CARBOXYLIC ACID AMIDO-QUINOXALINE-1,4-DI-N-N-OXIDE HALIDES AS ANTIBACTERIAL AGENTS AND PHARMACEUTICAL COMPOSITIONS COMPRISING SAID OXIDES

Kurt Ley, Odenthal-Globusch; Ulrich Eholser, Cologne-Stammheim; Roland Nast, Cologne-Buchheim; Karl Georg Metzger, Wuppertal-Elberfeld, and Dieter Fritsche, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

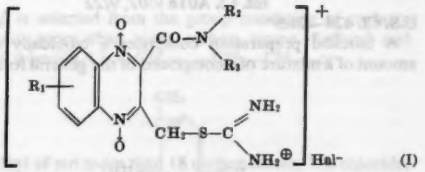
Division of Ser. No. 764,592, Oct. 2, 1968, Pat. No. 3,598,820. This application Jan. 22, 1970, Ser. No. 10,685

Claims priority, application Germany, Oct. 4, 1967, F 53669

Int. Cl. A61k 27/00

U.S. Cl. 424—250 **19 Claims**

2-Isothiouronium-methyl-3-carboxylic acid-amidoquinoxaline-1,4-di-N-oxide halides of the formula:



wherein:

R_1 is hydrogen, lower alkyl, lower alkoxy or chlorine,

R_2 is hydrogen, straight or branched chain alkyl or straight or branched chain alkyl substituted by hydroxy, lower alkoxy, acyloxy, monoalkylamino or dialkylamino,

R_3 is hydrogen, straight or branched chain alkyl, straight or branched chain alkyl substituted by hydroxy, lower alkoxy, acyloxy, monoalkylamino or dialkylamino, or when R_2 is hydrogen, cyclohexyl, or R_2 and R_3 together with the amide nitrogen atom form part of a 5- or 6-membered heterocyclic ring, and

Hal is chlorine or bromine, in combination with a pharmaceutically acceptable inert carrier are useful for their antibacterial effect.

These compositions or the active compounds can be administered subcutaneously or orally to animals and humans.

3,686,402

COMPOSITION AND METHOD OF USE FOR TREATING NAUSEA AND MENTAL DISORDERS USING THIEPIN DERIVATIVES

Walter Schindler, Riehen, and Erich Schmid, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 702,828, Feb. 5, 1968, Pat. No. 3,555,028. This application March 30, 1970, Ser. No. 29,316

Claims priority, application Switzerland, Feb. 10, 1967, 2020/67

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 4 Claims

The compounds are of the class of thiepin derivatives, more particularly thiepin derivatives, which may be substituted in the benzene rings by alkyl, alkoxy or alkylthio, further substituted in 11 positions by piperazinyl which may be fully substituted, and in 10-position by hydroxy or o-alkanoyl, and acid addition salts thereof. The compounds are useful as antiemetic, anaesthesia-potentiating, reflex-inhibiting and catatonia inducing agents. An illustrative embodiments is 11-(4-methyl-1-piperazinyl)-10,11-dihydrodibenzo[b,f]thiepin-10-ol.

3,686,403

Patent Not Issued For This Number

3,686,404

Patent Not Issued For This Number

3,686,405

BIOCIDAL PREPARATION

Eberhard Hofmann, Am Markuskreuz 1, 43 Essen-Bredeney, and Ulrich Holtschmidt, Veddershang 11, 43 Essen, both of Germany

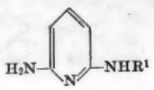
Filed Feb. 10, 1970, Ser. No. 10,280

Claims priority, application Germany, Feb. 18, 1969, P 19 08 078.5

Int. Cl. A01n *9/02, 9/22*

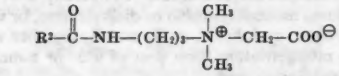
U.S. Cl. 424—263 4 Claims

A biocidal preparation comprises a biocidally effective amount of a mixture of a compound of the general formula:



I

wherein R^1 is alkyl with eight to 18 carbon atoms or benzyl which is chlorinated or brominated in 2- and/or 4-position and of a compound of the general formula:



II

wherein R^2 is alkyl with seven to 17 carbon atoms. The weight ratio of the compounds I and II in the mixture is about 2 : 1 to 1 : 5.

3,686,406

PROCESS FOR ALLEVIATING PAIN

Margaret H. Sherlock, 34 Parkway W., Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

Division of Ser. No. 866,012, Oct. 13, 1969, abandoned, which is a continuation-in-part of Ser. No. 835,743, June 23, 1969, abandoned. This application Sept. 18, 1970, Ser. No. 73,659

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 3 Claims

This invention relates to 2-(2-methylanilino)-nicotinic acid, the non-toxic pharmaceutically acceptable salts thereof and to the methods for the preparation and use thereof.

The tangible embodiments of this invention are prepared by condensing a 2-halonicotinic acid, or a functionally reactive equivalent thereof, with an o-toluidine, or a functionally reactive equivalent thereof, to produce either 2-(2-methylanilino)-nicotinic acid or a derivative which is convertible thereinto.

3,686,407

Patent Not Issued For This Number

3,686,408

COMPOSITIONS WITH 5-NITRO-2-FURYL-ISOXAZOLES AND THEIR USE AS ANTIBACTERIAL AND ANTIFUNGAL AGENTS

Graham Arton Howarth, Wilmslow, and William Hoyle, Bramhall, both of England, assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Division of Ser. No. 571,412, Aug. 10, 1966, Pat. No. 3,562,267. This application May 19, 1970, Ser. No. 36,808

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—272 12 Claims

Pharmaceutical compositions comprising a compound of the class of 3-(5-nitrofur-2-yl)-5-aminoisoxazoles having a nitrile, ester, amide or urea function in the 4-position and a pharmacologically acceptable carrier are useful antibacterial and antifungal agents. A method for protecting organic materials against bacterial or fungal deterioration is provided which comprises contacting or impregnating such material with a compound as defined above.

3,686,409

COMBINATION OF L-DOPA AND 2-IMINO-5-PHENYL-4-OXAZOLIDINONE USED TO TREAT PARKINSON'S DISEASE

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Filed Jan. 27, 1971, Ser. No. 110,253

Int. Cl. A61k *27/00*

U.S. Cl. 424—272 4 Claims

Covers a composition comprising the combination of 1-dopa and 2-imino-5-phenyl-4-oxazolidinone and salts thereof and use of said composition in treating Parkinson's disease.

3,686,410

SUBSTITUTED HALO PYRAZOLINONES FUNGICIDAL AGENTS

Kurt Findeisen, and Paul-Ernst Frohberger, both of Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

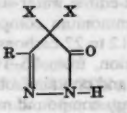
Filed Nov. 27, 1970, Ser. No. 93,394

Claims priority, application Germany, Dec. 6, 1969, P 19 61 372.0

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 8 Claims

Fungicidal compositions of and methods of combating fungi using certain halopyrazolinones of the formula



(I)

in which each X individually stands for a halogen atom, and R stands for a hydrogen atom, alkyl with up to 24 carbon atoms (which may carry at least one substituent selected from halogen atoms and nitro, chlorosulfonyl and nitrile groups), aryl (which may carry at least one substituent selected from halogen atoms, alkyl groups with up to three carbon atoms, and methoxy, ethoxy and nitro groups), a heterocyclic radical (which may carry at least one substituent selected from halogen atoms and lower alkyl groups), alkoxy, nitro, chlorosulfonyl, alkylsulfoxyl, alkylsulfonyl, alkylcarbamidyl, arylcarbamidyl, carbalkoxy, acyl or amidine, some of which are known, which possess
fungicidal properties and which may be produced by conventional methods.

3,686,411

AN INSECTICIDAL COMPOSITION AND METHOD CONTAINING 2-HALOGENO-BENZIMIDAZOLE DERIVATIVES

Wilhelm Ernst Frick, Baselland, and Thomas Wenger, Riehen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

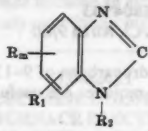
Division of Ser. No. 570,184, Aug. 4, 1966, Pat. No. 3,555,040. This application March 4, 1970, Ser. No. 19,142

Claims priority, application Switzerland, Aug. 6, 1965, 11111/65

Int. Cl. A01n 9/22

U.S. Cl. 424—273 **6 Claims**

2-Halogeno-benzimidazole derivatives having the structure



wherein R is selected from the group consisting of halogen, nitro, alkyl up to six carbon atoms, alkoxy of up to six carbon atoms, trifluoromethyl, and lower alkyl substituted amino, R_1 is selected from the group consisting of benzoylamino, halogenobenzoylamino, trifluoromethyl-benzoylamino, benzenesulfonylamino, halogenobenzenesulfonylamino- and loweralkylsulfonylamino R_2 is selected from the group consisting of hydrogen, alkali metal cation, and alkaline earth metal cation, Hal is halogen with an atomic number of at most 35 and *m* is an integer of from one to three are useful for control of keratin-devouring insects.

ERRATUM

For Class 424—274 see:
Patent No. 3,686,182

3,686,412

COMPOSITIONS CONTAINING BIS-CHROMONYL COMPOUNDS FOR INHIBITING ANTIGEN-ANTIBODY REACTIONS

Colin Fitzmaurice, 59 Westway, and Thomas Brian Lee, 68 Chester Road, both of Holmes Chapel, England

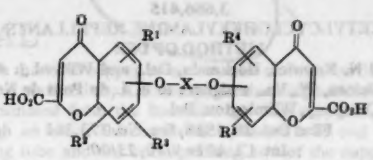
Continuation of Ser. No. 765,722, July 30, 1968, abandoned, which is a division of Ser. No. 536,281, March 22, 1966, Pat. No. 3,419,578. This application Oct. 2, 1970, Ser. No. 77,711

Claims priority, application Great Britain, Mar. 25, 1965, 12626/65; Dec. 9, 1965, 52414/65

Int. Cl. A61k 27/00

U.S. Cl. 424—283 **10 Claims**

Pharmaceutical compositions comprising a pharmaceutical carrier and a bis-chromonyl compound of the formula



and therapeutically acceptable salts, esters and amides thereof, in which R^1, R^2, R^3, R^4, R^5 and R^6 are each selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, hydroxyloweralkyl, haloloweralkyl, hydroxyloweralkoxy, loweralkoxyloweralkoxy and carboxyloweralkoxy; and X is selected from the group consisting of saturated and unsaturated, straight and branched hydrocarbon chains which may be interrupted by a member selected from the group consisting of benzene rings, dioxanyl, oxygen atoms and carbonyl groups, and which may be substituted by a member selected from the group consisting of halogen atoms, hydroxy groups and lower alkoxy groups are active to inhibit antigen-antibody reaction.

3,686,413

ANTHELMINTIC METHOD EMPLOYING CERTAIN DITHIOCARBANILATES

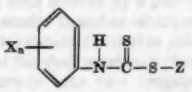
Glennon H. Hollrah, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 523,582, Jan. 28, 1966, abandoned, which is a continuation-in-part of Ser. Nos. 440,003, March 15, 1965, abandoned, and Ser. No. 440,004, March 15, 1965, abandoned. This application Dec. 22, 1969, Ser. No. 887,406

Int. Cl. A01n 9/12, 9/20; A61k 27/00

U.S. Cl. 424—300 **7 Claims**

Nemathelminthes and Platyhelminthes are controlled by exposing said helminthes to an effective amount of a compound of the formula



wherein Z is selected from the group consisting of carboxy alkyl of not more than eight carbon atoms, furfuryl and —ACOOR wherein A is —CH_2—, —CH_2—CH_2— or

and R is alkyl of not more than 18 carbon atoms; X is chloride, bromide or nitro and *n* is an integer from 0 to 5 inclusive provided that when X is nitro *n* is 1.

3,686,414

P-CHLOROBENZYL COMPOUNDS AND THEIR SEROTONIN LOWERING ABILITY

Billie Kenneth Koe, Chas Pfizer & Co., Inc., 235 E. 42nd St., New York, N.Y.

Continuation-in-part of Ser. No. 614,418, Feb. 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 495,337, Oct. 12, 1965, abandoned. This application March 6, 1969, Ser. No. 805,034

Int. Cl. A61k 27/00

U.S. Cl. 424—319 **1 Claim**

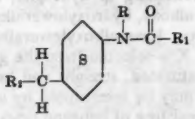
p-chlorophenylalanine and its pharmaceutically-acceptable acid addition salts are useful in relieving the symptoms of the carcinoid tumor syndrome.

3,686,415
N-ACETYLCYCLOHEXYLAMINE REPELLANTS AND METHOD OF USE

Richard N. Knowles, Hockessin, Del., and Wilfred J. Arthur, Charleston, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1968, Ser. No. 773,364
Int. Cl. A01n *9/20, 23/00*
U.S. Cl. 424—320 **10 Claims**

Repelling animals with N-acylcyclohexylamines of the formula:



wherein

R is hydrogen, methyl or ethyl;

R_1 is hydrogen or alkyl of one through four carbon atoms; and

R_2 is cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, bicycloalkyl, cycloalkylalkyl or tricycloalkyl.

Typical are N-acetyl-cis-4-cyclobutylmethylcyclohexylamine and N-acetyl-cis-4-cyclohexylmethylcyclohexylamine useful for repelling animals.

3,686,416
METHOD AND PREPARATION FOR CONTROLLING FEEDLOT BLOAT IN RUMINANTS

RoNel M. Myer, St. George, and Erle E. Bartley, Manhattan, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed July 17, 1970, Ser. No. 55,863
Int. Cl. A61k *27/00*
U.S. Cl. 424—329 **11 Claims**

Feedlot bloat (as distinguished from pasture or legume bloat) is controlled while the ruminants are being fed a high concentrate feedlot bloat-inducing ration by the oral administration of a ruminant-edible water-soluble salt of a dimethyl dialkyl quaternary ammonium compound wherein the alkyl groups contain from 12 to 22 carbons. In a preferred mode of practicing the invention, from 75–100 percent of the alkyl groups are saturated and contain from 16 to 18 carbons. The anion of the quaternary compound must be of the type forming a water-soluble salt with the quaternary cation.

3,686,417
Patent Not Issued For This Number

3,686,418
N-ACYL-N'-(HALOGENATED ARYL UREAS AS ANTIBACTERIAL AGENTS)

David Taber, Evanston, and Moneeb H. Zakaria, Chicago, both of Ill., assignors to Armour and Company, Chicago, Ill.

Division of Ser. No. 638,585, May 15, 1967, abandoned. This application Oct. 23, 1969, Ser. No. 868,937
Int. Cl. A01n *9/20*
U.S. Cl. 424—322 **2 Claims**

The use of N-Acyl-N'-(halogenated aryl) ureas as antibacterial agents and germicidal detergent compositions containing such ureas are disclosed.

3,686,419
PESTICIDAL COMPOSITION AND METHOD OF PREPARING SAME

Werner Duyfjes, and Willem Maas, both of Amsterdam, Netherlands, assignors to North American Philips Co., Inc., New York, N.Y.

Filed Jan. 21, 1969, Ser. No. 792,813
Claims priority, application Netherlands, Jan. 23, 1968, 6800959; April 5, 1968, 6804903
Int. Cl. A01n *9/00*
U.S. Cl. 424—356 **11 Claims**

Alkylated aromatic hydrocarbons of 9–13 carbon atoms in one or more of the alkyl moieties are useful as insect control agents in plant crops.

ELECTRICAL

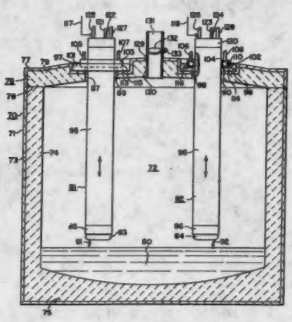
3,686,420
FURNACE AND ELECTRODE APPARATUS

Armin M. Bruning, Centralia, Mo., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 866,275, Oct. 14, 1969, Pat. No. 3,575,544, which is a division of Ser. No. 407,332, Oct. 29, 1964, abandoned. This application March 8, 1971, Ser. No. 121,929

Int. Cl. H05b 7/08, 7/10, 7/12

U.S. Cl. 13—15 8 Claims



Furnace apparatus includes a melting vessel with one or more electrodes mounted above melt in the vessel, each electrode being adapted to have an arc produced therefrom, each electrode including a fluid cooled arcing surface with means near the arcing surface to cause an arc therefrom to move substantially continuously over the arcing surface.

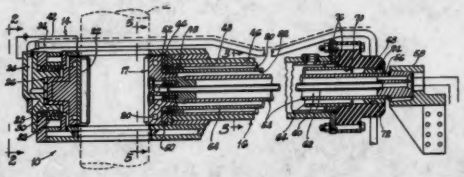
3,686,421
UNITIZED ELECTRIDE HOLDER AND ARM FOR ELECTRIC ARC FURNACE ELECTRODES OR THE LIKE

Edgar Wunsche, 80, William St. W., Oshawa, Ontario, Canada; Alfred H. Turner, and Lewis H. Durdin, both of P.O. Box 1148, Birmingham, Ala.

Filed Aug. 30, 1971, Ser. No. 176,138

Int. Cl. H05b 7/10; F27d 11/10

U.S. Cl. 13—15 19 Claims



The disclosed structure comprises a combined electrode holder and supporting arm for holding an electric furnace electrode or the like. The holder includes a clamping device mounted on the outer end of a tubular supporting arm which is preferably made of nonmagnetic stainless steel or some other high strength nonmagnetic material. The clamping device includes a contact member or shoe and means for producing clamping pressure between the contact member and the electrode. The electrical current is supplied to the contact member by a bus tube extending longitudinally within the tubular supporting arm, preferably along the axis thereof. The contact member and the bus tube are made of copper or some other material having high electrical conductivity. Within the tubular supporting arm the bus tube is surrounded by a shielding tube made of copper or some other material having high electrical conductivity. Generally, the shielding tube is electrically insulated from the bus tube and the supporting arm, although an electrical connection between one end of the shielding tube and the corresponding end of the supporting arm is permissible. The shielding tube acts as a magnetic shield around the bus tube and thus prevents the supporting arm from being heated by eddy currents induced in the supporting arm by the magnetic field around the bus tube. The shielding tube confines the magnetic field of the bus tube to the space between the bus tube and the shielding tube.

3,686,422
CRYOGENIC CONDUIT ASSEMBLY FOR CONDUCTING ELECTRICITY

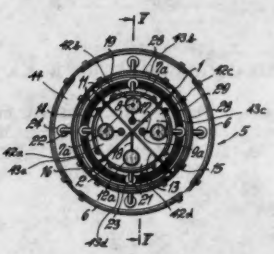
Conrad Doose, Julich, Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

Filed Oct. 28, 1970, Ser. No. 84,768

Claims priority, application Germany, Oct. 30, 1969, P 19 54 681.7

Int. Cl. H01b 9/06

U.S. Cl. 174—15 C 9 Claims



A cryogenic conduit assembly for conducting electricity has an outer insulating duct formed by a pair of coaxially nested tubes defining an annular chamber which receives a sleeve of reflective thermal insulation (radiation shield) and is evacuated. The interior of this duct receives a plurality of tubes each subdivided transversely into two longitudinally extending compartments, one used solely for circulation of a cryogen and the other for an electrical conductor. The conductor-receiving compartment is filled with liquid hydrogen (heat-transfer medium) which can be circulated and the other compartment contains rapidly circulating gaseous helium (cooling medium). The assembly is subdivided at joints, the duct having a transverse wall to each side of the joint to hermetically seal off the duct interior. Between these walls at the joint, in addition, there are longitudinally extending walls which define a plurality of zones each receiving one tube, and removable covers are provided for access to each of the zones. These zones can be sealed off from or connected to the duct interior by means of shunt conduits and valves during servicing.

3,686,423
METHOD OF COOLING LONG DISTANCE LOW TEMPERATURE ELECTRIC CONDUCTORS

Conrad Doose, and Wolfgang Sassin, both of Julich, Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Germany

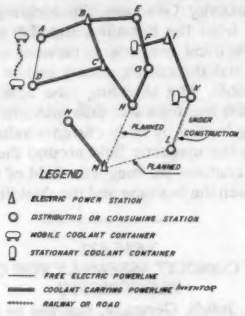
Filed Dec. 15, 1970, Ser. No. 98,232

Int. Cl. H01b 7/34

U.S. Cl. 174—15 C 7 Claims

In an electric power line system that includes legs formed of conduit assemblies carrying one or more coolants for maintaining the electric conductors and surrounding radiation

shields at very low temperatures, the flow rate of each coolant through any cross section of the conduit assembly differs from



the flow rate of the same type of coolant that passes, if at all, through the same cross section in an opposite direction.

3,686,424

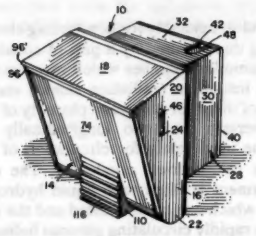
Patent Not Issued For This Number

3,686,425

RAIN TIGHT HOODED JUNCTION BOX AND COVER THEREFOR

Paul J. Zerwes, and Theodore A. Cohen, both of Chicago, Ill., assignors to Bell Electric Company, Chicago, Ill.

Filed Feb. 4, 1971, Ser. No. 112,617
Int. Cl. H02g *3/18*
U.S. Cl. 174—53 **29 Claims**



A rain tight, weatherproof electrical junction box having an outer hood on the front panel and a hooded, spring loaded cover mounted for pivotal movement within the outer hood between open and closed conditions, the cover being mounted on journal means such as pins seated within elongate slot means provided in the outer hood. The cover is spring-loaded by means of expansile coil spring means connected between the cover and the front panel, the axis of said spring means arranged normal to the axis of rotation of the cover. Cam means are provided at the rear edge of the cover for assisting in the positioning of said cover; bead mean are provided for assuring against moisture seepage along the cover to the front panel; and captive means are described for facilitating the securement of the combined panel and cover to an underlying installation, where necessary.

3,686,426

Patent Not Issued For This Number

3,686,427

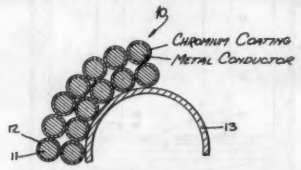
Patent Not Issued For This Number

3,686,428

MULTIPLE STRAND CONDUCTOR WITH INCREASED CONTACT RESISTANCE

Aurelio Lombardi, Sesto San Giovani; Pietro Anelli, and Gianfranco Bianchi, both of Milan, all of Italy, assignors to Industrie Phirelli Societa per Azioni, Milan, Italy

Filed Oct. 26, 1971, Ser. No. 192,240
Claims priority, application Italy, Oct. 29, 1970, 89560 A/70
Int. Cl. H01b *5/10*
U.S. Cl. 174—128 **10 Claims**



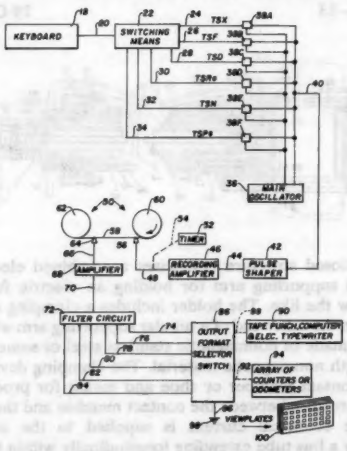
A conductor of stranded copper wires having a coating of chromium or chromium-based metal between the contacting surfaces of all or a portion of such wires to increase the contact resistance thereof. Also, a cable having a plurality of layers of such wires with such a coating between at least a pair of layers.

3,686,429

INTERACTION SYMBOL RECORDER FOR USE IN EVALUATING A DIALOGUE

Gene W. Moser, 9230 Perry Highway, Pittsburgh, Pa.; Robert A. Cox, 6641 Wilkins Ave., and James E. Teza, 5889 Aylesboro Ave., both of Pittsburgh, Pa.

Filed Jan. 28, 1969, Ser. No. 794,685
Int. Cl. G09b *7/00*
U.S. Cl. 178—2 R **5 Claims**



Disclosed is apparatus for use in evaluating dialogues in a teacher-pupil or panel-class situation. An observer-operated keyboard activates different ones of various parallel-connected tank circuits of an oscillator means, to generate signals of different frequency, dependent upon the keys depressed.

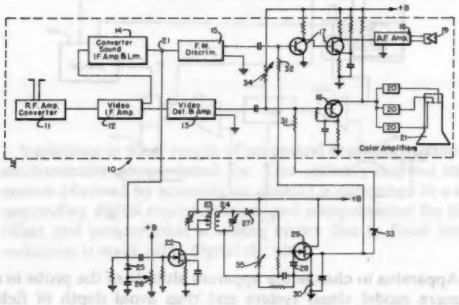
The frequency signals are recorded, as on magnetic tape. The output portion of apparatus comprises an analyzer composed of a plurality of filters tuned to individual ones of the different frequencies recorded, along with appropriate display or printout equipment.

3,686,430

MUTER FOR SOLID STATE TELEVISION RECEIVERS

Louis W. Parker, 2408 Sunrise Key Blvd., Fort Lauderdale, Fla.

Filed March 25, 1971, Ser. No. 127,944
Int. Cl. H04n 5/62
U.S. Cl. 178—5.8 A 17 Claims



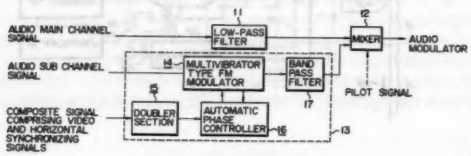
An intercarrier color television receiver using solid state components is provided with a tuned circuit sharply tuned to the intercarrier frequency for selectively producing a control signal. The control signal controls the conduction of a field effect transistor which in turn controls generation of a potential operative to selectively render the receiver's picture producing means and sound producing means inoperative. A bias source coupled to the control electrode of the field effect transistor nullifies spurious control signals produced by the tuned circuit upon reception of noise alone.

3,686,431

FM-FM AUDIO MULTIPLEX UNIT FOR TELEVISION BROADCASTING SYSTEM

Kouichi Kitaoka, and Taku Ichihara, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 46,959, June 17, 1970, abandoned. This application Dec. 2, 1971, Ser. No. 204,147
Claims priority, application Japan, June 20, 1969, 44/58010
Int. Cl. H04n 7/06; H04j 1/20
U.S. Cl. 178—5.8 R 6 Claims



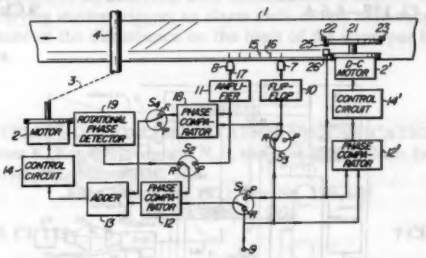
An FM-FM audio multiplex unit for television broadcasting systems comprising a multivibrator type frequency modulator having a multivibrator for producing sub channel signals frequency modulated by audio sub channel signals, means for producing signals having double the frequency of horizontal synchronizing signals and an automatic phase controller for controlling the carrier frequency of the sub channel signals, the phase controller including a reference signal oscillator, first and second mixers for mixing the carrier signals in the sub channel signals and the signals having double the frequency of horizontal synchronizing signals with reference signals to obtain signals having high frequencies, first and second divider sections for dividing the frequencies of output signals from the first and second mixers to obtain signals having low frequencies and a phase detector for comparing the phases of output signals from the first and second dividers each other thereby making small the frequency variation of the horizontal synchronizing signals and the sub carrier signals, and resulting in causing the carrier signals of the sub channel signals to be synchronized with those having double the frequency of the horizontal synchronizing signals.

3,686,432

RUNNING-SPEED CONTROL SYSTEM FOR MAGNETIC RECORDING MEDIUM

Masahiro Deguchi, Higashi-Osaka, and Osahiko Yano, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kodoma, Kadoma-shi, Osaka, Japan

Filed Sept. 29, 1970, Ser. No. 76,498
Claims priority, application Japan, Oct. 7, 1969, 44/80642; Nov. 14, 1969, 44/91636
Int. Cl. G11b 15/52; H04n 5/78
U.S. Cl. 178—6.6 P 5 Claims



A running speed control system for a magnetic recording medium, in which reference signals of a specified frequency are recorded on a running magnetic recording medium and successively regenerated, and then the phase of the regenerated signals is compared with that of the reference signals, a driving mechanism for driving said magnetic recording medium being controlled in accordance with the phase difference thus developed, thereby to feed said magnetic recording medium at a speed relative to said reference signals.

3,686,433

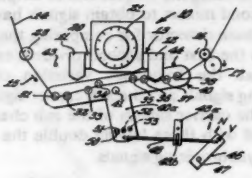
TRANSDUCER SYSTEM ADAPTABLE FOR AUDIO OR VIDEO RECORDING OR REPRODUCTION

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 456,192, May 17, 1965, Pat. No. 3,449,528, and a continuation-in-part of Ser. No. 813,359, Feb. 7, 1969, Pat. No. 3,595,584, which is a division of Ser. No. 456,192, May 17, 1965, Pat. No. 3,449,528. This application June 9, 1969, Ser. No. 831,352
Int. Cl. G11b 15/60, 21/12; H04n 5/78
U.S. Cl. 178—6.6 A 11 Claims

A magnetic transducer system for selective audio or video operation with movable guides for shifting the tape path between audio, video, and rewind positions, or with fixed guides defining both an audio and video tape path, the audio tape path being clear of the video head, for example. A video transducer with a receptacle removably receiving and provid-

ing external energization for a battery powered audio transducer unit. An audio/video cartridge transducer arrangement



for selective operation with audio and video cartridges of different configuration, preferably using a common capstan element.

3,686,434

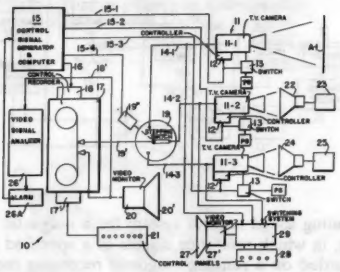
AREA SURVEILLANCE SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation-in-part of Ser. No. 225,173, Aug. 27, 1962, Continuation of Ser. No. 668,348, June 27, 1957, Pat. No. 3,051,777, which is a continuation-in-part of Ser. No. 267,377, March 11, 1963, which is a continuation-in-part of Ser. No. 781,689, Nov. 21, 1968, Pat. No. 3,539,715, which is a continuation of Ser. No. 347,999, Feb. 26, 1964, which is a continuation-in-part of Ser. No. 765,401, Oct. 6, 1958, abandoned. This application June 17, 1970, Ser. No. 47,023

Int. Cl. H04n *5/78, 7/18*

U.S. Cl. 178—6.6 A **9 Claims**



A system for continuously scanning an area for surveillance purposes with one or more television cameras by the controlled movement of the scanning means, and recording the resultant video signals for future analysis or monitoring. The scanning may be effected at video motion picture frequency or at a slow scan rate continuously or intermittently at predetermined time intervals. Provision is made for the automatic analysis of the scanning signals and the generation of alarm signals when unusual phenomena occur and change same.

In one form of system, a plurality of television cameras are each operative to scan a different image field which may include one or more phenomena such as a spacial volume such as a land or air area, warehouse, factory or store location, face of a cathode ray tube receiving signals generated by radar, sonar or other form of instrumentation. The outputs of these cameras or scanners are multiplexed and are sequentially recorded in a magnetic recorder such as one containing a multiple-channel magnetic tape. Each camera may be operated to complete a full frame sweep of its read-beam in sequence with the full frame sweeps of the other cameras.

The invention is also concerned with the automatic and remote control of an area scanner such as a television camera in accordance with the characteristics of signals generated by said camera and analyzed at a remote location.

3,686,435

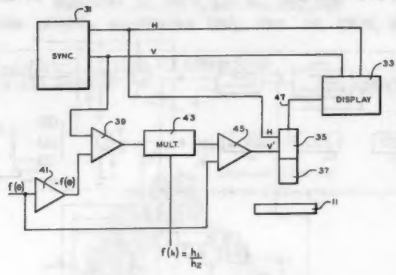
APPARENT ALTITUDE CHANGES IN TELEVISION MODEL VISUAL SYSTEM

William C. Ebeling, deceased, late of Wilton, Conn. (by Dorothy Stott Ebeling, executrix), assignor to The Singer Company, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,112

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **12 Claims**



Apparatus to change the apparent altitude of the probe in a camera model visual system and thus avoid depth of field problems at low altitudes. By stretching the vertical raster on camera tube in proportion to the ratio of actual and desired probe altitude while maintaining a normal display raster, an apparent altitude change appears on the displayed scene.

3,686,436

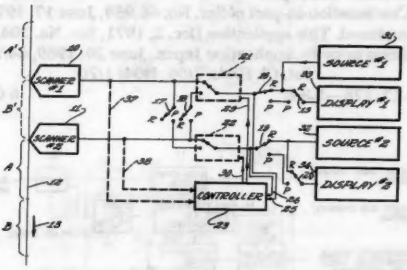
MULTIPLE VIDEO SIGNAL TRANSDUCING SYSTEM AND METHOD

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Dec. 30, 1969, Ser. No. 889,222

Int. Cl. G11b *21/00;* **H04n** *5/76*

U.S. Cl. 178—6.6 SF **10 Claims**

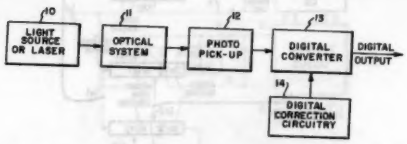


Method and apparatus for transducing a plurality of video signals on a record medium by interlacing recorded fields of different signals along a channel, and using a series of scanners or a scanner with shiftable scanning beam for repeatedly reproducing each recorded field, or using a scanner and a repeater device to reproduce and repeat each recorded signal, and thus provide for display of a continuous sequence of fields, while using much less record medium for a given program.

3,686,437
ELECTRONIC COMPENSATION FOR OPTICAL SYSTEM FOCAL LENGTH VARIATION

Murray Leonard, Edison, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Oct. 14, 1970, Ser. No. 80,719
Int. Cl. H04n 3/26
U.S. Cl. 178—7.6 11 Claims

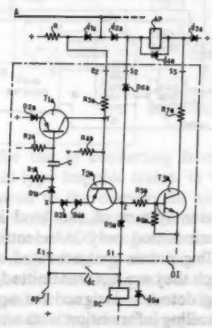


Variations in focal length of an optical scanning system are electronically compensated for. The optically-derived information (derived by scanning an object) is converted to a corresponding digital representation, and compensation for fixed offset and proportional scanning errors due to focal length variations is made using digital circuitry.

3,686,438
PULSE DISCRIMINATOR

Claude Rousseau, Joinville-Le-Pont, France, assignor to C. I. T. -Compagnie Industrielle des Telecommunications, Paris, France

Filed June 29, 1970, Ser. No. 50,404
Claims priority, application France, June 27, 1969, 6921829; Dec. 24, 1969, 6945005
Int. Cl. H04l 11/15
U.S. Cl. 178—69.6 20 Claims

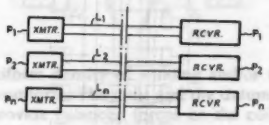


Pulse discriminator device comprising a blocking circuit with a time constant, detecting the appearance of a given polarity, memorizing, during a certain period, the said polarity, and enabling, during that period, the detection of an opposite polarity, a detection and control circuit detecting this opposite polarity and acting on a control circuit which signals, at the output, the detection of this opposite polarity and a maintenance circuit dependent on the control circuit and enabling the first polarity to be kept in the memory while the opposite polarity is being received.

3,686,439
TELEPHONE-LINE INSTALLATION FOR KEEPING A REMOTE WATCH ON PREMISES

Jean Gerard, Neuilly-sur-Seine, France, assignor to Fichet-Bauche, Suresnes, France

Filed Aug. 24, 1970, Ser. No. 66,536
Claims priority, application France, April 28, 1970, 7015512
Int. Cl. H04m 11/04
U.S. Cl. 179—5 R 14 Claims

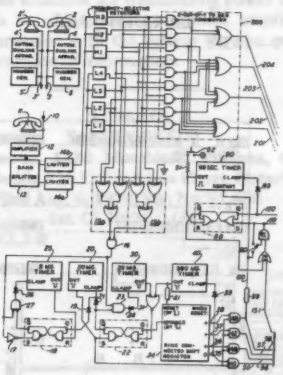


A plurality of sensors at a transmitting station, responsive to different types of disturbances on premises to be kept under surveillance, generate respective bits of a basic binary word which is modulated onto a low-frequency carrier for communication to a receiving station. At the transmitter, an encoder successively converts the basic word into different bit combinations which are then reconverted at the receiver into the original word for evaluation in a shift register. Upon iterative reception of an abnormal code combination, a counter at the receiving station triggers an alarm distinctively indicating the nature of the disturbance on the basis of the improper bit or bits.

3,686,440
TELEPHONE CALLING-STATION IDENTIFICATION

James K. Kroeger, Newark, N.J., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed March 26, 1971, Ser. No. 128,448
Int. Cl. H04m 15/06
U.S. Cl. 179—5.5 7 Claims



Station-identification apparatus for use in reception of telephone calls from stations at each of which there is repetitively superimposed on the call therefrom a respective series, peculiar to that station, of numeral-representing signals. The received signals are screened in various respects, and the numerals represented by a series thereof are sequentially stored. Output means are actuated to read out the stored signals under conditions which minimize the risk of erroneous readout.

3,686,441

TDM FAULT DETECTOR

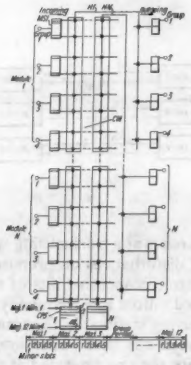
David M. Thomas, Bayshore, Ottawa, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 15, 1970, Ser. No. 72,269

Claims priority, application Great Britain, Sept. 24, 1969, 47,364/69

Int. Cl. H04j *3/14*

U.S. Cl. 179—15 BF **3 Claims**



A time division multiplex fault detector employs certain time slots in each multiple's frame to test the highways and gates as well as to set storage elements which control the systems and other circuits.

3,686,442

PROCESS AND CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF MESSAGE SIGNALS, IN PARTICULAR PCM MESSAGE SIGNALS, FROM A TRANSMISSION STATION TO A RECEIVING STATION

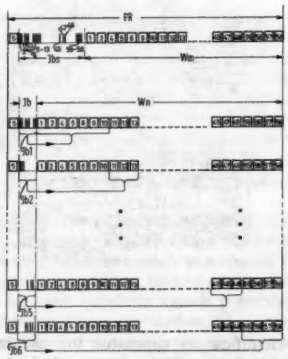
Max Schlichte, Maxhofstrasse 30a, 8000 Munich, 71, Germany

Filed Sept. 29, 1970, Ser. No. 76,492

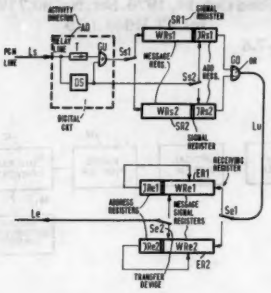
Claims priority, application Germany, Sept. 29, 1969, P 19 49 155.5

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BY **8 Claims**



A process and apparatus for transmitting and receiving pulse code modulated message signals are described. Time multiplex transmission techniques are used. Succeeding time slots in a given pulse frame are assigned to connections, and the address signals associated herewith follow each other in an increasing order of rank. Each of the address signals are transmitted in the form of individual signal elements in the aforementioned order of rank and in time elements assigned to each particular connection within separate time ranges of the pulse frames.



3,686,443

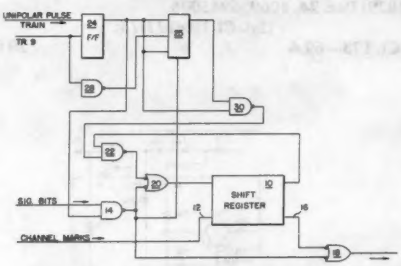
SUPERVISORY SIGNALLING IN PCM TELEPHONE SYSTEM

Paul K. Kavanaugh, 528 Countryside Lane, Webster, N.Y., and Michael A. Boehly, 35 Nory Lane, Rochester, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,615

Int. Cl. H04j *1/14*

U.S. Cl. 179—15 BY **3 Claims**



In a T-carrier system of the kind in which supervisory signals are transmitted only in selected frames and not in others, signalling pulses are generated at the receiver during frames in which they are not transmitted, thereby enabling use of a signalling detector designed for operation in systems in which the signalling information is transmitted in every frame.

3,686,444

TELEPHONE INSTRUMENTS

Robert Andrew Stevenson, 34 Haukshead Place, Newton Aycliffe, England

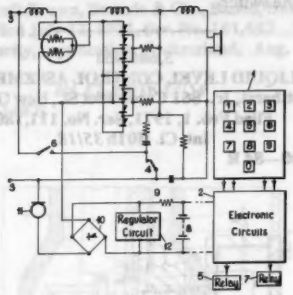
Filed March 1, 1971, Ser. No. 122,583

Int. Cl. H04m *1/00*

U.S. Cl. 179—81 R **6 Claims**

In a push-button telephone instrument including electronic circuits for storing push-button derived signals and for

generating call signalling impulses, a battery within or associated with the instrument for energizing the electronic circuits is recharged during non-impulsing periods of telephone calls by means of the energizing current from the exchange for the carbon granule microphone.

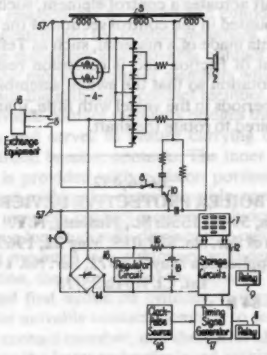


3,686,445

TIMING SIGNAL GENERATORS

Bernard Sydney Barnaby, 139 Musley Hill, Ware; Graham Webb, 18a Talbut Rd., Wembley, and Robert Andrew Stevenson, 34 Hawkshead Place, Newton Aycliffe, all of England

Filed March 1, 1971, Ser. No. 122,582
Int. Cl. H03k *17/02, 21/00;* H04m *1/26*
U.S. Cl. 179—84 R **7 Claims**



A timing circuit for use in converting from push-button derived signals to dial-type impulse trains, in which the different intervals required in the conversion are obtained by dividing-down signals from a master oscillator operating at 20 kH. The timing circuit uses MOS integrated circuits and comprises three "twisted ring" dividing circuits of different division ratios, different interval timing signals being derived from coincident output signals from two of these dividing circuits and from all three of the dividing circuits respectively.

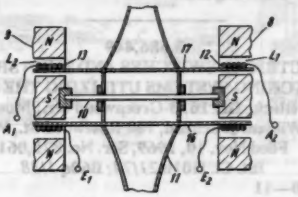
3,686,446

PUSH-PULL MOVING COIL LOUDSPEAKER HAVING ELECTROMAGNETIC CENTERING MEANS

Josef W. Manger, Karlstadter, 8725 Arnstein, Germany

Filed Dec. 16, 1969, Ser. No. 885,658
Claims priority, application Germany, Dec. 19, 1968, P 18 15 694.0
Int. Cl. H04r *9/02*
U.S. Cl. 179—115.5 DV **16 Claims**

An electrodynamic acoustic transducer such as a loudspeaker or microphone in which the datum or center position of the diaphragm is determined by two coils. The coils are fixed to one another and to the diaphragm and cut magnetic fields. Datum currents are provided for the coils and the coils are of non-uniform density of winding and/or the magnetic fields are non-uniform. The coils and the datum currents are arranged to provide balanced forces on the coils only when the diaphragm is in the datum position.

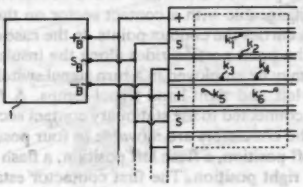


3,686,447

REMOTE CONTROLLED MINIATURE-VEHICLE

Kauko Armas Takalo, Lauttasaarentie 33 A 12, Helsinki 20, Finland

Continuation-in-part of Ser. No. 789,853, Jan. 8, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 118,315
Claims priority, application Finland, Jan. 8, 1968, 35/68
Int. Cl. A63h *33/26*
U.S. Cl. 191—2 **4 Claims**



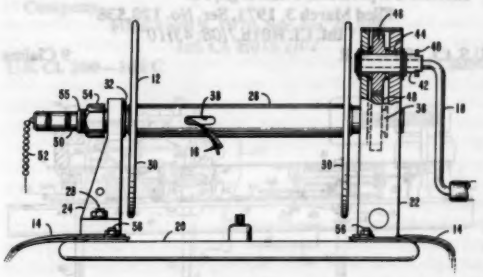
A system for remote control of objects moving freely on a surface includes solutions for transmitting power and remote control signals to objects without power amplification of signals. In connection with the system may be used several modes of transmission of information.

3,686,448

SAFETY REEL

Jerome S. Brower, 1170 Murchison, Pomona, Calif., and Douglas D. Smith, 956 E. Elmorado Court, Ontario, Calif.

Filed Aug. 6, 1970, Ser. No. 61,680
Int. Cl. H02G *11/02*
U.S. Cl. 191—12.2 R **4 Claims**



The invention relates to a lightweight portable reel for carrying blasting wire in which the end of the wire is electrically

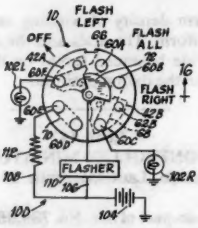
connected internal of the reel axle to a female jack into which a male plug is inserted to act as a shorting plug to prevent accidental firing and in which the other end of the wire is connected to the charge so that the wire need not be cut for connection to the blasting machine.

3,686,449

ELECTRICAL SWITCHES AND TURN SIGNAL SWITCHING SYSTEMS UTILIZING THE SAME

Charles E. Black, III, 1613 Greenwood Dr., Mount Prospect, Ill., and William J. Schaad, 780 Rosewood St., Winnetka, Ill.

Filed Nov. 10, 1969, Ser. No. 875,061
Int. Cl. H01h *21/74*; B60q *1/38*
U.S. Cl. 200—11 **2 Claims**



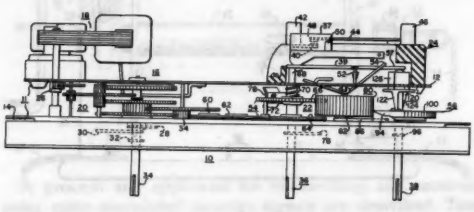
The electrical switch comprises a rotatable carriage having two contractors for engaging a series of contact points. Each contactor comprises a sector-shaped portion for engaging the contact points, and a point portion spaced inwardly from the sector-shaped portion. In the case of one contactor, the point portion is engageable with a contact sector on the insulating board which carries the contact points. In the case of the other contactor, the point portion rides along the insulating board. The switch may be employed in a turn signal switching system comprising left and right-hand signal lamps. A first battery feed wire is connected to the stationary contact sector through a flasher. The contactors are movable to four positions, comprising an off position, a flash left position, a flash all position and a flash right position. The first contactor establishes the connections between the contact sector and the contact points for flashing the left signal lamps, all signal lamps, and the right signal lamps. A second battery feed wire is connected to a pair of contact points through a dimming resistor. These contact points are engageable by the second contactor, which establishes connections for lighting the right lamp dimly when the left lamp is flashing, while lighting the left lamp dimly when the right lamp is flashing. Other modified switches and turn signal switching systems are also disclosed.

3,686,450

INTERVAL TIMING MECHANISM WITH IMPROVED CAM AND CAM FOLLOWER STRUCTURE

Thomas G. Willis, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 3, 1971, Ser. No. 120,538
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 R **9 Claims**



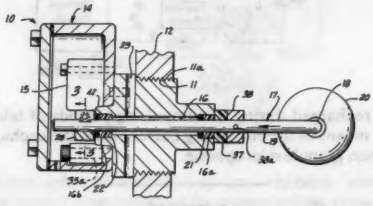
A timing device including a switch for automatically controlling the energizing time of an appliance. The timing device includes a rotor disc having a face which defines a predetermined cam profile. Rotary motion of the rotor disc in response to a motive device, provides axial motion of a cam follower for operating the switch.

3,686,451

LIQUID LEVEL CONTROL ASSEMBLY

John E. Pottharst, Jr., 861 Carondelet St., New Orleans, La.

Filed Feb. 1, 1971, Ser. No. 111,180
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 R **5 Claims**



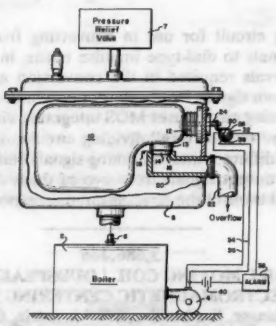
The liquid level control assembly disclosed includes a housing adapted for mounting in the wall of a vessel containing corrosive liquid or vapor. The housing has a control section and an opening connecting the inside of the vessel with the control section. An L-shaped shaft has one leg in the vessel upon which a float is mounted. The other leg extends through the opening in the housing into the control section. When a change in liquid level moves the float to a given level, the rotation of the shaft actuates a control element, such as an electrical switch, mounted in the control section of the housing. Two sealing elements made of a material, such as Teflon, that has a low coefficient of friction and is corrosion resistant support the shaft for rotation so that the switch assembly will operate for extended periods in the vessel with little, if any, increase in the force required to rotate the shaft.

3,686,452

BOILER PROTECTIVE DEVICE

Jerry J. Opiela, 59-42 155th St., Flushing, N.Y.

Continuation of Ser. No. 827,015, May 22, 1969, abandoned. This application May 7, 1971, Ser. No. 141,390
Int. Cl. H01h *35/18*
U.S. Cl. 200—84 B **3 Claims**

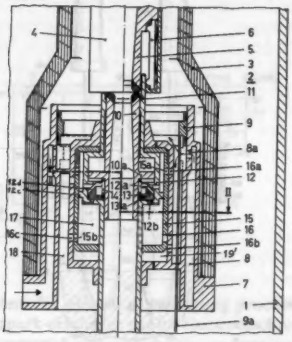


A float chamber to be connected to the upper portion of a steam boiler contains a float which closes an overflow valve until lifted by water rising in the boiler to excessive height. The float moreover controls a switch for interrupting firing of the boiler when the float is lifted, and for signalling such interruption.

3,686,453
GAS-BLAST CIRCUIT BREAKER

Carl-Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown, Boverie & Cie., Baden, Switzerland

Filed July 12, 1971, Ser. No. 161,652
Claims priority, application Switzerland, Aug. 7, 1970, 11911/70
Int. Cl. H01h 33/54
U.S. Cl. 200—148 B 10 Claims



A contact system for an electrical circuit breaker of the gas-blast type includes a tubular stationary contact member and two concentrically arranged tubular movable contact members actuated respectively by piston and cylinder units structurally incorporated into the contact members. In the "make" position of the stationary and movable contact members, the inner one of the movable contact members which is designed as a nozzle abuts the stationary contact member, and the outer one of the movable contact members bridges the abutted contact members and serves to ensure carrying of the current through the circuit breaker contacts. The inner movable contact member is provided with a piston portion slidable in a cylinder formed within the outer movable contact member, and the outer movable contact member includes a piston portion slidable in a longitudinally displaceable cylinder which itself is slidably mounted in a stationary cylinder. During a "break" operation, the outer one of the movable contact members is actuated first within its cylinder, it then entrains the inner one of the movable contact members to separate it from the stationary contact member, and thereafter also entrains its cylinder causing the latter to be displaced within the stationary cylinder. The chamber between the end of the displaceable cylinder and the corresponding end of the stationary cylinder provides pneumatic damping for the displaceable cylinder and the entrained movable contact assembly until the terminal position is reached.

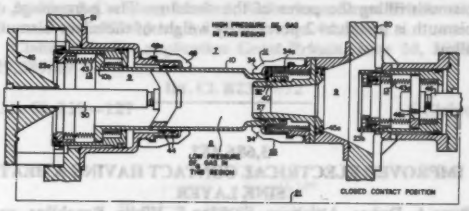
3,686,454
GAS-BLAST CIRCUIT INTERRUPTER WITH PRIMARY AND SECONDARY BLAST VALVES

Lee E. Berkebile, 11979 Frankstown Rd., Pittsburgh, Pa.

Filed Sept. 16, 1968, Ser. No. 759,992
Int. Cl. H01h 33/82
U.S. Cl. 200—148 R 6 Claims

A gas-blast type of circuit breaker is provided having separable contacts with a primary blast valve closely adjacent the point of abutment of the separable contacts, and a secondary blast valve controlling the flow of gas through at least one of the separable contacts.

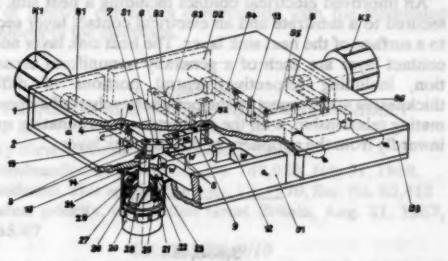
In one embodiment of the invention, there is provided a pair of tubular separable contacts, through which the gas exhausts, and the region within both tubular separable contacts is controlled by downstream secondary blast valves mechanically connected together, and operated in response to opening motion of the separable contacts.



3,686,455
HIGH FREQUENCY SWITCH

Hanfried Sonnberger, Ottobrunn, Germany, assignor to Rohde & Schwarz

Filed April 8, 1970, Ser. No. 26,531
Claims priority, application Germany, April 17, 1969, P 19 19 548.3
Int. Cl. H01h 1/42, 3/26
U.S. Cl. 200—153 S 4 Claims



A high frequency switch particularly adapted for use in an attenuation box having a switch arm formed of sheet metal with spaced, parallel strip portions interconnected by a web portion. The ends of the switch arm have contact tongues extending therefrom with a pair of contact tongues on one end having means for pivotally connecting to a conductor having a pair of parallel surface.

3,686,456
CONTACT STRUCTURE FOR AN ELECTRIC CIRCUIT BREAKER

Joseph L. Talento, Media, Pa., assignor to General Electric Company

Filed April 9, 1970, Ser. No. 26,888
Int. Cl. H01h 1/02
U.S. Cl. 200—166 C 9 Claims

Discloses a circuit breaker with a pair of contacts that are located in a fluid medium and are relatively movable into and

out of engagement with each other. Each of these contacts comprises a porous skeleton of a refractory material, such as tungsten or tungsten carbide, and an alloy of silver and bismuth filling the pores of the skeleton. The percentage of bismuth is less than 2 percent by weight of the silver-bismuth alloy.

3,686,457

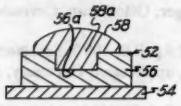
IMPROVED ELECTRICAL CONTACT HAVING A HEAT SINK LAYER

Rene A. Dubac, Attleboro; Sheldon S. White, Brookline, and Joseph A. Willoughby, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1971, Ser. No. 112,534

Int. Cl. H01h 1/02

U.S. Cl. 200—166 C **5 Claims**



An improved electrical contact including a heat sink layer secured to a substrate and an electrical contact layer secured to a surface of the heat sink layer. The heat sink layer and the contact layer are each of a generally nonuniform cross-section, including respective central portions of differing thicknesses with respect to the peripheries thereof disposed in mating relationship, with the contact layer terminating spaced inwardly from the periphery of the heat sink layer.

3,686,458

SUPER CONDUCTIVE ELEMENT SWITCH

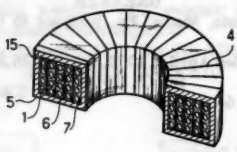
Jean Denel, 60 rue Remy Dumoncel, Paris 14e; Jean-Pierre Krebs, 22 rue de Chateaubriand, 92-Chatenay-Malabry, and Enrique Santa-Maria, La Seigneurie, Bt.B., 91-Villiers-sur-Orge, all of France

Filed Aug. 25, 1971, Ser. No. 174,826

Claims priority, application France, Aug. 28, 1970, 7031535

Int. Cl. H01h 1/02

U.S. Cl. 200—166 C **6 Claims**



A superconductive element switch having a first winding which assumes an annular form capable of passing from a superconductive state to a conductor state by application of a pulse of an intense magnetic field. This pulse is applied through a second control winding. Electrical power can be stored to a high degree within the superconductive element and then restored in an extremely fast responsive time, by changing the state of the first winding from a superconductive to a conductor state.

3,686,459

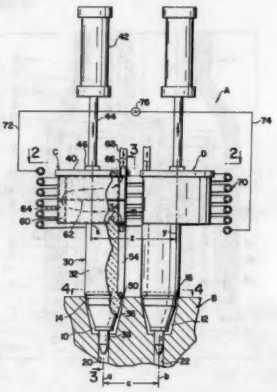
MULTIPLE INDUCTOR UNIT FOR INDUCTION HEAT DEVICE

John C. Lewis, Hamilton, Ontario, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Oct. 20, 1971, Ser. No. 190,965

Int. Cl. H05b 9/02

U.S. Cl. 219—10.57 **5 Claims**



In an induction heating device for inductively heating adjacent, first and second generally conical surfaces having generally parallel axes, which device includes at least two inductor units each having a secondary for energizing an inductor thereon, there is provided a common primary surrounding both secondary windings to allow heating of the closely spaced conical surfaces.

3,686,460

APPARATUS FOR CONTROLLING THE TEMPERATURE OF AN INDUCTIVELY HEATED DRAW ROLL

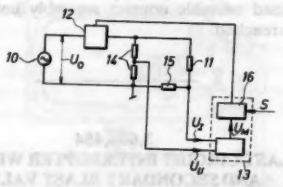
Hansruedi Lamparter, and Gelli Anton Spescha, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed July 21, 1971, Ser. No. 164,577

Claims priority, application Switzerland, July 23, 1970, 11160/70

Int. Cl. B21b 27/06; H05b 3/02, 9/06

U.S. Cl. 219—10.77 **11 Claims**



The signal processing device for controlling the supply of heat energy to the heating coil utilizes a circuit in which a signal is produced in proportion to the resistance of the roll. The signal is obtained from signals proportional to the voltage measured in the coil and the current in the coil. The proportional signal is then used to shut off or open the supply of heat energy to the coil if the signal exceeds or falls below a pre-set signal corresponding to the desired roll temperature.

3,686,461

SERVOSYSTEM FOR GAP ELECTRICAL MACHINING PROCESSES (ESPECIALLY ELECTROEROSION)

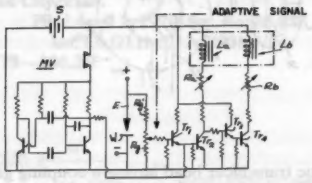
Kiyoshi Inoue, 3-chome 16-8, Kamiyoga, Setagaya-ku, Tokyo, Japan

Filed March 13, 1970, Ser. No. 19,364

Claims priority, application Japan, Mar. 13, 1969, 44/189991; Apr. 2, 1969, 44/25317; Apr. 2, 1969, 44/25318; Apr. 30, 1969, 44/33960; May 30, 1969, 44/42188; Nov. 1, 1969, 44/87832; Nov. 26, 1969, 44/94741; Nov. 26, 1969, 44/94742

Int. Cl. B23p *1/14*

U.S. Cl. 219—69 G 3 Claims



A servosystem for electrical machining processes adapted to regulate a spark-discharge gap in electrodischarge machining and other material-removal, shaping or forming operations in which the energy of an electrical discharge across the gap is exploited. Instead of the usual reference voltage or other electrical value for comparison with a gap parameter whereby the difference or other algebraic comparison controls the electrode drive, a gap detector is provided to feed a substantially continuous (analog) value to a discriminator having a threshold value and producing a digital output in accordance with the comparison. The digital output represents an "advance" or a "retract" condition and is communicated via a suitable switch or amplifier to the respective electromagnetic member of the control system, the latter member being a servomotor mechnically coupled with the movable electrode or a fluid-control valve hydraulically or pneumatically coupled with the movable electrode.

3,686,462

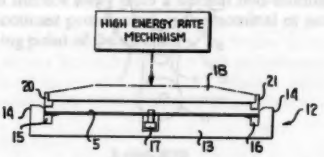
ARTICLE HAVING SURFACE TREATMENT FOR WELDING

Paul M. Erlandson, Palos Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 796,799, Feb. 5, 1969, Pat. No. 3,597,574. This application Feb. 11, 1971, Ser. No. 114,467

Int. Cl. B23k *9/28*

U.S. Cl. 219—93 7 Claims



This disclosure relates to electrical resistance welding and more particularly to the surface treatment of metal members along the faying and electrode engageable surfaces thereof. The faying surfaces are embossed or formed by a high energy rate method so as to be of a uniform finish whereby there will be a predetermined resistance between engaged faying surfaces thereby providing for a better control on the power required for forming a weld and the resultant metal weld.

3,686,463

METHOD OF MULTIPLE SPOT WELDING

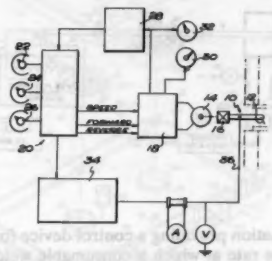
Eric Charlesworth, Sheffield, Great Britain, assignor to Robert Jenkins & Company Limited, Rotherham, Great Britain

Filed June 8, 1970, Ser. No. 44,487

Claims priority, application Great Britain, June 10, 1969, 29,389/69

Int. Cl. B23k *9/12*

U.S. Cl. 219—127 6 Claims



The invention relates to a method of and apparatus for electric welding using a non-consumable electrode. It envisages the modulated movement of an electrode so that it moves in regular increments and produces a continuous weld constituted by a series of spot welds which overlap by a predetermined and regular extent, and may include also the modulation of electric current in combination with the modulated movement of the electrode.

3,686,464

TRANSFORMER WITH VARIABLE SECONDARY REACTANCE

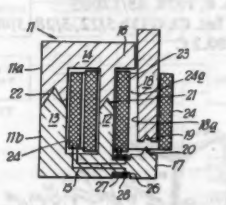
Sidney Hirst, Gatwick Rd., Crawley, England

Continuation-in-part of Ser. No. 749,050, July 31, 1968, abandoned. This application Aug. 13, 1970, Ser. No. 63,412

Claims priority, application Great Britain, Aug. 21, 1967, 38,465/67

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R 20 Claims



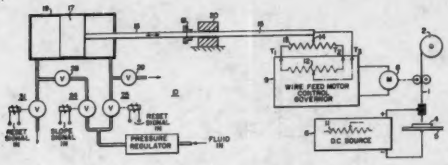
Single phase or three phase welding transformers having a primary coil wound on one limb of a rectangular core, a secondary coil wound around both said one limb and a movable core member so as to enclose said primary coil. The limbs of said rectangular core adjacent said one limb are formed with upper and lower extensions respectively which abut the upper and lower ends respectively of said movable core member when in its lowered position. The movable core member is movable in a direction substantially parallel to the longitudinal axis of said secondary coil such that an air gap of variable width is formed between the lower extension and the lower end of the movable core member. Non-magnetic guides fixed to the movable core member are spring urged against a bearing surface provided on a casting fixed to the rectangular core. The reaction to the spring force is also provided by the casting. Gaps may be maintained at all times between the rectangular core and the movable core member and/or bias coils provided to maintain high open circuit secondary voltage.

3,686,465

AUTOMATIC SLOPE CONTROL ARRANGEMENT FOR WELDING APPARATUS

John M. Urbanic, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed March 25, 1971, Ser. No. 127,918
Int. Cl. B23k 9/10; H05b 31/18; H01c 13/00
U.S. Cl. 219—131 F 1 Claim



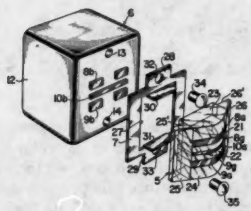
A combination providing a control device for automatically changing the rate at which a consumable welding material is fed to a weld area to eliminate crater cracking. The combination comprises a potentiometer having a sliding contact arm mechanically connected to be moved by a means operated by pressurized fluid. Operation of the fluid means is effected automatically by means capable of directing fluid thereto at a controlled, changing rate to provide a controlled, gradual change in the resistance of the potentiometer. Such control of the potentiometer is effective to provide a controlled, gradual change in the rate at which the welding material is fed to the weld area.

3,686,466

EASILY ENGAGEABLE MAGNETIC HEAD WITH VISIBLE GAP ALIGNING MEANS

Fujio Sato, and Ko Homma, both of Tokyo, Japan, assignors to Akai Electric Company, Limited, Tokyo, Japan

Filed Sept. 9, 1970, Ser. No. 70,631
Claims priority, application Japan, Sept. 12, 1969, 44/86667; Oct. 29, 1969, 44/102765; Nov. 3, 1969, 44/87854; Dec. 4, 1969, 44/115368; Dec. 22, 1969, 44/121692; Feb. 6, 1970, 45/12005
Int. Cl. G11b 5/22, 5/28, 5/40
U.S. Cl. 179—100.2 C 5 Claims



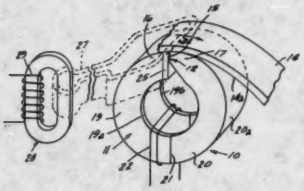
A magnetic head has a front head portion which is adapted to engage with a rear head portion. The rear head portion consists of a plurality of U-shaped core portions, a shield plate and a holder therefor. The front head portion comprises a stacked arrangement which includes a plurality of core tips and a shield plate therebetween. The stacked arrangement is surrounded by transparent or semitransparent wear resistant members. When the front head portion is engaged to the rear head portion by a rectangular shaped frame through which the front head portion passes, a plurality of closed magnetic paths will be formed by the abutting of each of the U-shaped core portions with a given one of the core tips.

3,686,467

MAGNETIC TRANSDUCER SYSTEM AND METHOD

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Aug. 8, 1969, Ser. No. 848,559
Int. Cl. G11b 5/00
U.S. Cl. 179—100.2 C 1 Claim



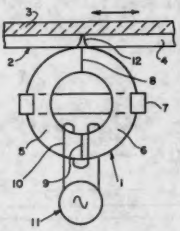
A magnetic transducer head having a coupling gap of controllable effective longitudinal dimension. In one embodiment a gap spacer of magnetic material is energized by bias current and/or signal current during recording while being deenergized during playback to provide a larger coupling gap for recording than for playback. Recording gap size may be controlled dynamically, or a very high frequency bias current such as 100 mhz may be supplied to the magnetic gap spacer. A magnetic head may have a zero gap dimension when the magnetic gap spacer is deenergized to prevent any substantial residual external field. An electro-magnetic transducer head with the electric circuit portion including a path through the electrically conductive magnetic corepiece at the transducer gap, thus concentrating the gap field and mininizing core losses at very high bias or signal frequencies.

3,686,468

MAGNETIC TRANSDUCER HAVING TWO CORE MEMBERS OF DISTINCTLY DIFFERENT MAGNETIC FIELD CARRYING CHARACTERISTICS

Robert C. Garnier, Jr., 9611 W. Lorraine Place, Milwaukee, Wis.

Filed Sept. 15, 1969, Ser. No. 857,763
Int. Cl. G11b 5/14, 7/12, 9/00
U.S. Cl. 179—100.2 C 3 Claims



An energy transducer includes a pair of abutting core members with highly finished surfaces at the junction between the members. The members are formed of a similar material having differing field intensity support capacity. For a magnetic energy transducer, the two members would have substantially different permeabilities. The two core members would have a similar flux density resulting in distinctly different field intensities in each of the members in order to establish and main-

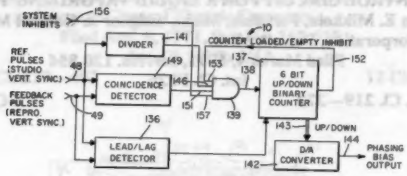
tain the corresponding flux density. The difference in field intensity tends to establish a step function change at the junction. As the field cannot change abruptly, a high field concentration appears at the junction immediately adjacent the outer surface of the members which can be recorded on a passing magnetic tape.

3,686,469

STEADY STATE PHASE ERROR CORRECTION CIRCUIT

Harold V. Clark, Palo Alto, and Gerald C. Engbretson, Burlingame, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed April 2, 1970, Ser. No. 25,053
Int. Cl. G11b *5/52*; H03b *3/04*
U.S. Cl. 179—100.2 T **8 Claims**



In a servo system in which the angular phase of a rotating member is synchronized to the phase of a reference signal by a dynamic servo loop, circuitry is shown operating in cooperation with the dynamic servo loop for developing a variable DC bias signal for eliminating residual phase errors remaining during the dynamic servo control. In particular, the rotating member is embodied by a rotary transducer assembly carried by a wideband magnetic tape transport in which the transducer assembly is to be rotatably controlled by the servo systems so as to scan a prerecorded signal carried by the magnetic tape at a rate and phase which causes the signal thereby reproduced to occur in synchronous with a reference timing signal. The variable DC phase bias signal is developed by increasing or decreasing the level of an up/down binary counter by feeding relatively low rate clock pulses thereto and conditioning the direction of the counter in accordance with the detection of phase lead or phase lag between the reference and reproduce signals. A digital-to-analog converter is coupled to and responsive to the counting level of the binary counter to issue a step variable DC voltage having a magnitude and polarity corresponding to the number of counting states and the direction thereof away from a normal mid-modulus count level of the counter preselected as the nominal or zero phase error operating point of the circuit.

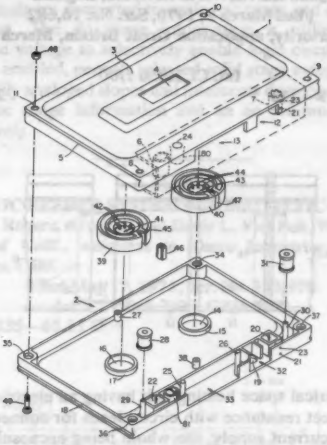
3,686,470

TWO SHELL MAGNETIC TAPE CARTRIDGE

Eugene G. Stahlberg, Westminster; James M. Tagawa, Boulder, and Hui-Li Tiao, Boulder, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,345
Int. Cl. G11b *15/08, 23/06*
U.S. Cl. 179—100.2 Z **9 Claims**

A cartridge stores a magnetic recording tape on two reels. Two non-symmetrical molded shells form a hollow chamber retaining the tape and reels and incorporating file protection. Mechanical registration holes through both shells provide



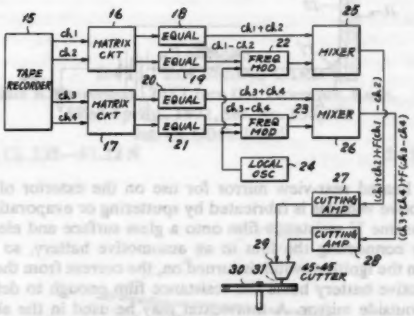
distinguishable accesses for photosensing different tape conditions. Indented edges facilitate clamping in a recorder.

3,686,471

SYSTEM FOR RECORDING AND/OR REPRODUCING FOUR CHANNEL SIGNALS ON A RECORD DISC

Nobuaki Takahashi, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ku, Japan

Filed Nov. 25, 1970, Ser. No. 92,803
Claims priority, application Japan, Nov. 28, 1969, 44/95587; March 15, 1970, 45/21826; March 24, 1970, 45/24579; July 5, 1970, 45/58313
Int. Cl. G11b *3/00, 3/74*; H04b *5/00*
U.S. Cl. 179—100.4 ST **12 Claims**



This system records four channel signals on or reproduces them from a record disc. The four channel signals are combined into sum signals and difference signals, respectively, each composed of two signals. Each difference signal is converted into an angle modulated wave by modulating a carrier from a single oscillator and is multiplexed with each sum signal. The four channel signals picked up from the record disc are reproduced and sounded respectively from four speakers placed at predetermined positions.

ERRATA

For Classes 219—10.57 through 219—131 F see: Patents Nos. 3,686,459 through 3,686,465

3,686,472

SPACE HEATING APPARATUS

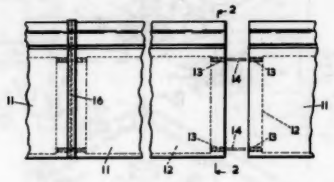
Kenneth John Harris, North Leverton, England, assignor to Barbara Joan Harris, North Leverton, England

Filed March 5, 1970, Ser. No. 16,682

Claims priority, application Great Britain, March 6, 1969, 12,054/69

Int. Cl. H05b 1/00

U.S. Cl. 219—213 20 Claims



An electrical space heating unit having an electrically conductive sheet resistance with circuit leads for connection to a source of current supply, the whole being encapsulated in a mass of electrically insulating refractory material containing a synthetic resin.

3,686,473

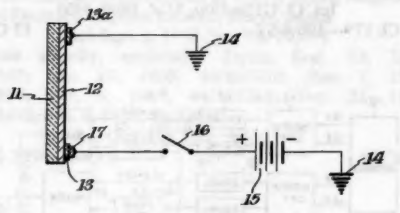
HEATED REAR-VIEW MIRROR

George A. Shirn, Williamstown, Mass., and James B. Lazott, Bedford, N.H., assignors to Sprague Electric Company, North Adams, Mass.

Filed March 25, 1971, Ser. No. 127,898

Int. Cl. H05b 1/00

U.S. Cl. 219—219 8 Claims



A heated rear-view mirror for use on the exterior of automotive vehicles is fabricated by sputtering or evaporating a Nichrome V resistance film onto a glass surface and electrically connecting the film to an automotive battery, so that when the ignition switch is turned on, the current from the automotive battery heats the resistance film enough to defrost the outside mirror. A thermostat may be used in the above system so that the mirror is heated only when necessary. The Nichrome V film serves two main purposes, first, as a heating source and second, as a low-glare mirrored surface for the system.

3,686,474

VACUUM PUMPS

Basil Dixon Power, Horsham, England, assignor to The British Oxygen Company Limited, London, England

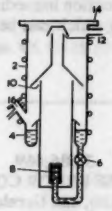
Filed May 21, 1970, Ser. No. 39,565

Claims priority, application Great Britain, May 27, 1969, 26,829/69

Int. Cl. F22b 1/28

U.S. Cl. 219—271 8 Claims

A vapor vacuum pump includes an electrical vaporiser unit made of thin filaments of electroconductive material arranged to convey between them by capillary action the working liquid



of the pump, for vaporization by heat generated by resistance of the filaments to passage of a current of electricity passing therethrough.

3,686,475

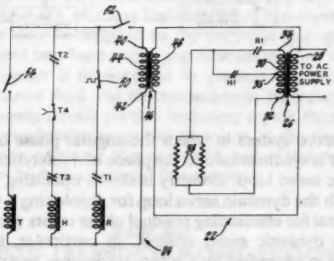
CONTROL CIRCUIT FOR A LIQUID VAPORIZING TOOL

John E. Mikkola, Ferndale, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed March 4, 1971, Ser. No. 120,854

Int. Cl. F22b

U.S. Cl. 219—272 4 Claims



A control circuit for controlling the temperature of a liquid vaporizing tool to a temperature required to vaporize the liquid. A low voltage is applied to heating elements on the tool to maintain the tool at the required temperature to vaporize the liquid during standby operation when there is no liquid being supplied to the tool. A high voltage is applied to the heating elements during operation of the tool, when liquid is being supplied thereto, so as to accommodate the increased heat input requirement caused by the vaporization of the liquid to maintain the tool at the vaporizing temperature. A thermal switch located on the tool opens or closes the respective voltage supply circuits to maintain the tool at the required vaporization temperature. In addition, to compensate for the thermal lag in the tool and to accommodate the sudden high heat demand caused by liquid vaporization when the liquid is initially supplied to the tool, the thermal switch is bypassed and the high voltage is applied to the heating elements for a specified time duration in anticipation of the thermal lag.

3,686,476

OVEN WITH TEMPERATURE LIMITING PROTECTION AND INDICATING SYSTEM

George W. Schauer, Jr., Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

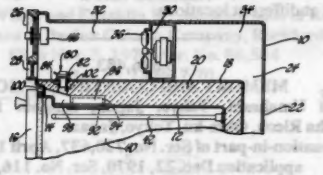
Continuation-in-part of Ser. No. 56,485, July 20, 1970, Pat. No. 3,619,564. This application Aug. 5, 1971, Ser. No. 169,295

Int. Cl. F27d 11/02

U.S. Cl. 219—413 3 Claims

A self-cleaning oven having a high limit thermostat which

protects against an over-temperature condition inside the oven and a cooling fan failure outside the oven and having an



oven control clock motor in series with said thermostat so that the user can see on the oven clock how long the oven has been cut off.

3,686,477

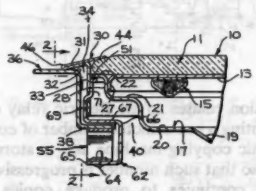
MOUNTING SYSTEM FOR SOLID PLATE SURFACE HEATING UNITS

Raymond L. Dills, and James A. Dooley, both of Louisville, Ky., assignors to General Electric Company

Filed Aug. 6, 1971, Ser. No. 169,619

Int. Cl. H05b *3/68*

U.S. Cl. 219—462 **12 Claims**



A glass plate surface heating unit supported on a heat spreader plate that is combined with an underlying heating element and a heat reflector pan. A trim ring surrounds the unit, and the ring has support means for fastening the unit components together. The tim ring has a manually operable, top-serviceable spring locking means for fastening the heating unit in a supporting panel.

3,686,478

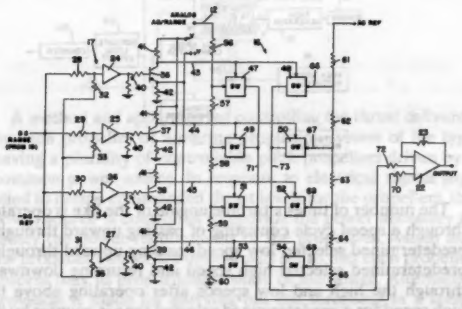
ELECTRONIC BALLISTIC COMPUTER CIRCUIT

Ira I. Goldberg, Philadelphia, Pa.; Paul M. Marasco, Cherry Hill, N.J., and Kenneth R. Pfleger, Warminster, Pa., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 13, 1970, Ser. No. 89,213

Int. Cl. G06g *7/28, 7/80*

U.S. Cl. 235—61.5 E **3 Claims**



An all electronic, tank housed, ballistics computer circuit which upon the receipt of laser BCD range signals from a laser range finder, provides electrical signals containing information which is representative of a plurality of straight line slopes and intercepts so as to electronically approximate a known ballistic function for gun positioning purposes. The received BCD signals are converted to analog ac range and dc range information. The dc range information is utilized with a reference voltage to selectively enable logic circuitry which, when so enabled, permits selected solid stage switches to pass electrically analoged slopes and intercepts developed from the analog ac range information and an ac reference voltage, respectively.

3,686,479

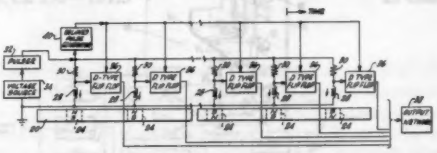
STATIC READER SYSTEM FOR MAGNETIC CARDS

Waldo I. Rogers, Arcadia, and Denis L. Van Pelt, Westminster both of Calif., assignors to Rusco Industries, Inc., Los Angeles, Calif.

Filed May 17, 1971, Ser. No. 143,978

Int. Cl. G06k *7/08*; G11b *5/00*

U.S. Cl. 235—61.11 D **8 Claims**



A plurality of parallel electromagnetic sensors extend from one wall of a housing, and a card is slidably inserted between the opposite wall and the remaining ends of the sensors so that magnetic spots in the card have their fields coaxially aligned with the sensors. Each sensor has a core of high initial permeability that is substantially saturated by the card spot aligned therewith. The coils of the sensors are pulsed for reading data in the card, and are included in a system which utilizes the aiding and opposing relations of the fields of the coils and card spots to develop binary logic signals. Different arrangements are shown for exciting the coils serially and in parallel, and for establishing binary logic signals by magnitude or phase detection.

3,686,480

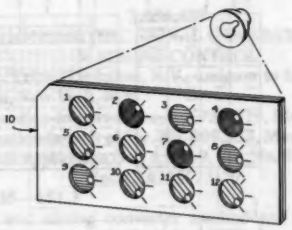
DATA PROCESSING CARD

William R. Bowerman, 2457 Jasu Dr., Lawrence, Kans.

Filed April 1, 1971, Ser. No. 130,172

Int. Cl. G06k *19/06*

U.S. Cl. 235—61.12 N **5 Claims**



A data processing card is provided with one or more apertures each with a window rotatably mounted with respect thereto. The window may be of polarizing material or bear an indicating arrow or the like. Information is set into the card by rotating each window to selected angle conveniently done with a pencil applied to a tab attached to the window and registerable with indexing marks on the card. Two or more cards can be superimposed one upon the other with their apertures

aligned. By illuminating the stack of cards from the rear, the information on the several cards can be examined from the front for matching and mismatching of information. If a bit of information on one card corresponds with the bit of information on the other card in a corresponding window, their polarizing filters will be oriented in the same manner and light will pass. If the information bits are different, the filters will be differently oriented and light will be blocked.

3,686,481

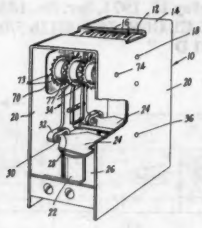
COUNTER WITH THIN FLEXIBLE BARRIER

Edwin J. McConnell, Windsor, Conn., assignor to Redington Counters, Inc., Windsor, Conn.

Filed Aug. 26, 1970, Ser. No. 67,053

Int. Cl. G06m *1/00*

U.S. Cl. 235—92 C **15 Claims**



A counter has a thin, flexible barrier member separating pivotally mounted operating members in the counter so as to accommodate burrs or other imperfections as well as misalignment. The pivotally mounted members are supported on shafts which extend through the barrier member and are biased against the flexible barrier member so that any burrs or roughness on the faces of the moving members abutting the flexible barrier member will produce deflection thereof and movement of the members against the biasing means without interfering with the operation of the counter.

3,686,482

ARRANGEMENT FOR REGISTERING THE PRESENCE AND THE AVAILABILITY OF PERSONNEL

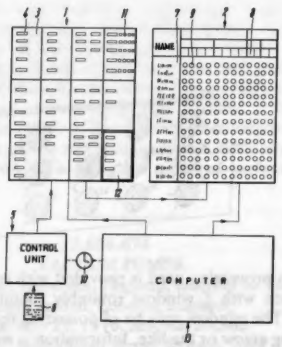
Franz Gelder, Gabelsberger Str. 36, Salzburg, Austria

Filed Sept. 15, 1970, Ser. No. 72,471

Claims priority, application Austria, Sept. 15, 1969, 8734/69

Int. Cl. G06m *1/22*

U.S. Cl. 235—92 EA **16 Claims**



A pair of indicator boards are provided for registering the presence and availability of employees for different types of work, the first board having signs identifying individual employees arranged in fields according to work category. The second board has a matrix arrangement of lamps with one line for each employee and one column for each work location and is actuated to display the availability of employees as substitutes at different locations.

3,686,483

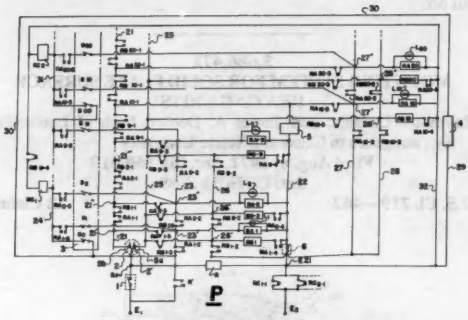
MEMORY AND COUNTING DEVICE

Minoru Umahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Ohta-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 720,637, April 11, 1968. This application Dec. 22, 1970, Ser. No. 116,701

Int. Cl. B41l *39/02*; H03k *23/03*

U.S. Cl. 235—92 J **9 Claims**



This invention relates to an electric relay circuit arrangement for counting a pre-selected number of copies to be made in an automatic copying machine and to store the number of copies made so that such number is progressively indicated as the machine continues to produce copies until the pre-selected number is completed. The counting is accomplished by relays which are progressively actuated by a copy actuated counting switch. The actuated relays remain energized in self-latching circuits until reaching of the pre-selected count restores all circuits to the starting position. Visual indicator means are connected in parallel to the counting relays.

3,686,484

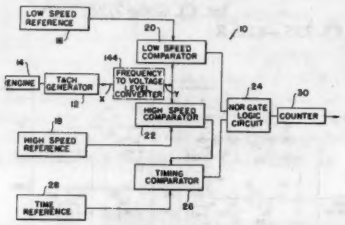
TURBINE ENGINE CYCLE COUNTER

Michael F. Ciemochowski, 24425 Curie Ave., Warren, Mich.

Continuation of Ser. No. 788,248, Dec. 31, 1968, abandoned. This application April 14, 1971, Ser. No. 134,090

Int. Cl. G01d *21/00*, *1/14*

U.S. Cl. 235—92 FQ **13 Claims**

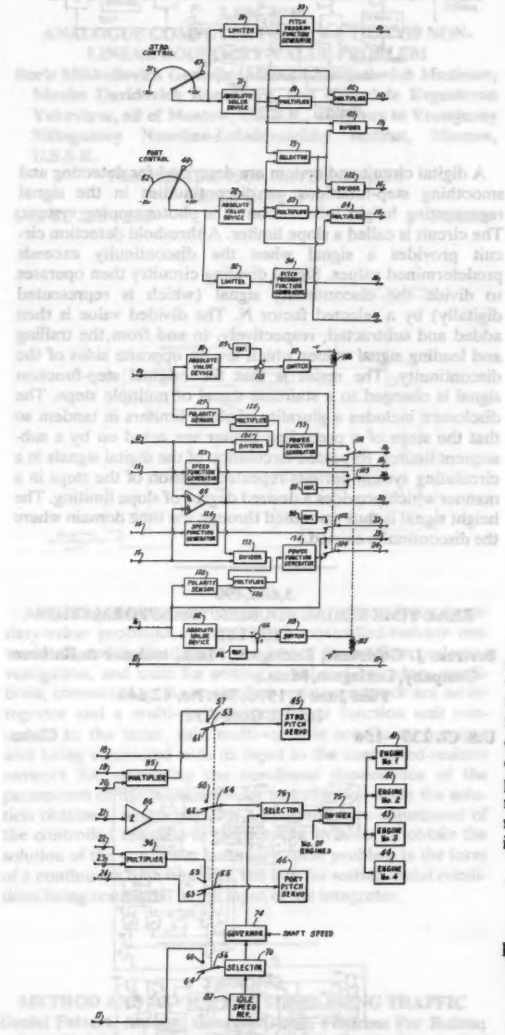


The number of times a turbine engine or the like is operated through a speed cycle consisting of passing upward through a predetermined selected low speed, passing upward through a predetermined selected high speed and returning downward through the high and low speeds after operating above the high speed for a predetermined selected time is counter by the structure disclosed in accordance with the method disclosed to provide an indication of engine maintenance requirements.

3,686,485
THRUST CONTROLLER FOR PROPULSION SYSTEMS WITH COMMONLY DRIVEN, CONTROLLABLE PITCH PROPELLERS

William H. Wiley, and Franklin W. Johnson, both of Rockford, Ill., assignors to Barber Colman Company, Rockford, Ill.

Filed Nov. 3, 1970, Ser. No. 86,584
Int. Cl. G06g 7/70
U.S. Cl. 235—150.2 3 Claims

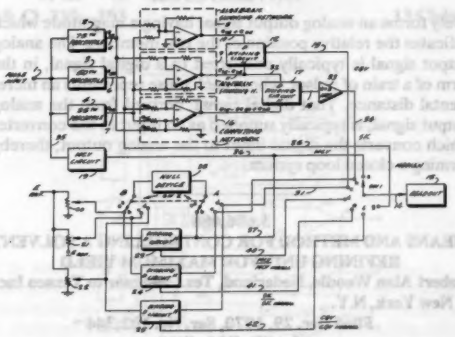


A method and apparatus for controlling the thrust delivered by each propeller of a marine propulsion system of the type having a plurality of controllable pitch propellers driven by a common power source. In response to electrical signals supplied to define commanded thrust levels for the propellers, the power source is controlled to provide the power necessary to satisfy the power requirements of the propulsion system and the propeller pitches are individually set so that each propeller absorbs only its proportionate share of the power. Alternative provision is made for carrying out the foregoing in a speed mode or in a power mode. In the speed mode, the power source is controlled in response to any given set of commanded thrust levels so as to maintain the propellers rotating at a substantially constant speed which is selected to be the higher of a predetermined idle speed for the propulsion system and of the minimum speed necessary to satisfy the highest of the commanded thrust levels. In the power mode, the power source is controlled in response to any given set of commanded thrust levels so as to deliver a substantially constant amount of power which is selected to be the power necessary for the propellers to deliver the amounts of thrust commanded therefrom without their shaft speed dropping below the idle speed. The method and apparatus are also compatible with an operation of the propulsion system in which separate engines are dedicated to the several propellers.

3,686,486
APPARATUS FOR OBTAINING STATISTICAL HEMATOLOGICAL INDICES AND ANALYZING SAME AND METHOD

Wallace H. Coulter, Miami Springs, and Walter R. Hogg, Miami Lakes, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Dec. 2, 1970, Ser. No. 94,426
Int. Cl. G06g 7/12; G01n 27/00
U.S. Cl. 235—151.3 21 Claims



Apparatus which receives a train of electrical pulses from a particle analyzing device such as one which is operated in accordance with the Coulter principle, derives statistical hematological indices from such train of pulses, stores the same in suitable storage means, receives a second train of pulses and derives the same indices from the second train of pulses, and compares the two indices. A readout device provides the comparison information. In this manner indices from normal blood may be obtained and thereafter the same indices from unknown blood may be obtained and compared with the normal indices for diagnosis of pathology.

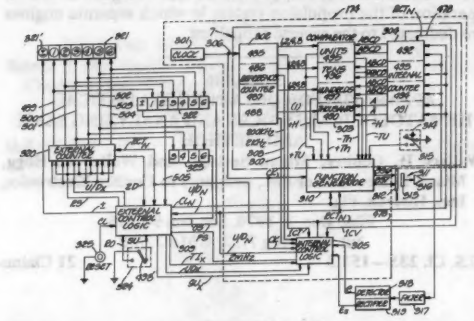
3,686,487
TRIGONOMETRIC SIGNAL GENERATOR AND MACHINE CONTROL

Robert W. Tripp, Tuckahoe, N.Y., assignor to Inductosyn Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 739,579, May 14, 1968, Continuation-in-part of Ser. No. 809,533, March 24, 1969. This application Oct. 6, 1969, Ser. No. 864,079
Int. Cl. G06f 15/20
U.S. Cl. 235—151.3 12 Claims

Digital and analog converter method and apparatus for generating trigonometrically related signals suitable for use with position measuring and position controlling systems. Two or more converter analog output signals are formed as a function of the digital input. The digital input generates a digital count difference between the counts in two digital counters. The two counters are both stepped by synchronously derived stepping pulses to produce counter output signals, exhibiting a phase difference proportional to the digital count difference. The counter output signals are logically combined to form analog output signals. Those analog output signals are pulse-width modulated rectangular waveforms which each include a

fundamental sinusoidal frequency component having an amplitude proportional to a trigonometric function of the digital input. The analog output signals from the converter are typically connected as inputs to a position measuring device to trigonometrically define the position between two members of the position measuring device. The position measuring device is typically an transducer or other data element which responsively forms an analog output signal having a magnitude which indicates the relative position of the two members. The analog output signal is typically converted to a digital signal, in the form of a train of pulses, where each pulse represents an incremental distance. That digital signal, derived from the analog output signal, is typically supplied as an input to the converter which converts the digital input to the analog output, thereby forming a closed loop system.

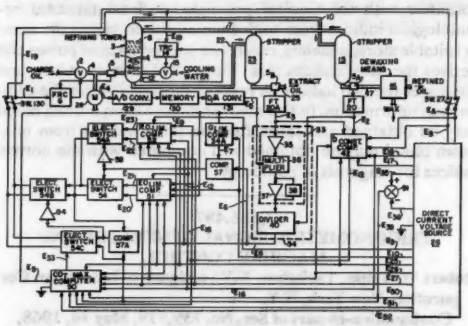


3,686,488

MEANS AND METHOD FOR CONTROLLING A SOLVENT REFINING UNIT FOR MAXIMUM YIELD

Robert Alan Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,344
Int. Cl. G06g 7/58
U.S. Cl. 235—151.12 **14 Claims**



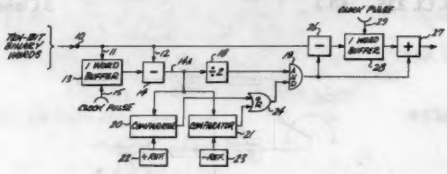
A system for controlling a solvent refining unit so as to operate the refining unit at the maximum limit of its operating parameters. Three such operating parameters are the refining temperature which is limited by the miscibility of charge oil and the solvent, the flow rates of extract oil and refined oil, which are limited by the mechanical design of the refining unit, obtained from the refining of the charge oil. A plurality of computers determine the values of constants from equations, hereinafter disclosed, so that the operating parameter that is limiting may be determined. A plurality of analog computers generate control signals for the different limiting operating parameters. Switching means apply the proper control signals to the refining unit in accordance with the determination of which operating parameter is limiting.

3,686,489

DIGITAL SLOPE LIMITER

Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Hobrough Limited, Vancouver, B. C., Canada

Filed Aug. 27, 1970, Ser. No. 67,493
Int. Cl. H03k 5/08, 5/20; H01j 39/12
U.S. Cl. 235—152 **14 Claims**



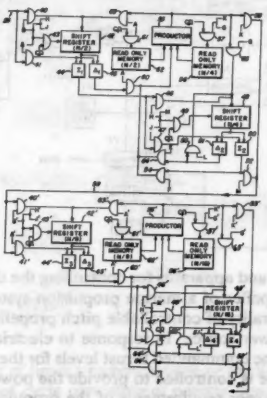
A digital circuit and system are described for detecting and smoothing step-functions or discontinuities in the signal representing height information in a photomapping system. The circuit is called a slope limiter. A threshold detection circuit provides a signal when the discontinuity exceeds predetermined values. Signal dividing circuitry then operates to divide the discontinuity signal (which is represented digitally) by a selected factor N. The divided value is then added and subtracted, respectively, to and from the trailing and leading signal values which are on opposite sides of the discontinuity. The result is that the original step-function signal is changed to a staircase signal of multiple steps. The disclosure includes a plurality of slope limiters in tandem so that the steps of a preceding limiter are acted on by a subsequent limiter. Repeated circulation of the digital signals in a circulating system permits repeated division of the steps in a manner which provides a desired degree of slope limiting. The height signal is thus smoothed through the time domain where the discontinuity existed.

3,686,490

REAL TIME SERIAL FOURIER TRANSFORMATION CIRCUIT

Bertram J. Goldstone, Lexington, Mass., assignor to Ratheon Company, Lexington, Mass.

Filed June 2, 1970, Ser. No. 42,641
Int. Cl. G06f 7/38
U.S. Cl. 235—156 **1 Claim**



Circuitry for sampling a time varying waveform, converting each sample to a complex digital number representative of a predetermined parameter and then analyzing each one of such complex digital numbers in a plurality of stages serially to derive the Fourier transform of the original signal. The dis-

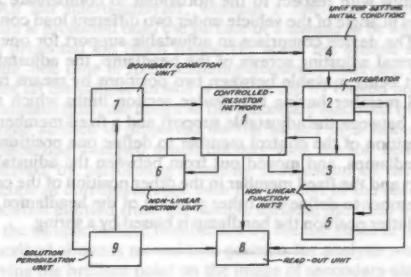
closed circuitry is adapted to analyzing N samples of a complex waveform, where N is an integral power of 2, but may be adapted to analyze any number of samples or any radix other than 2. Successive pairs of stages in the analyzing section of the circuitry are arranged to time-share a single digital multiplier, referred to as a productor, so as to reduce the complexity of the circuitry required to carry out the multiplication necessary in the transformation process.

3,686,491

ANALOGUE COMPUTER FOR SOLUTION OF NON-LINEAR BOUNDARY-VALUE PROBLEM

Boris Mikhailovich Geshelin; Mikhail Mikhailovich Maximov; Maxim Davidovich Rozenberg, and Nadezhda Evgenievna Yakovleva, all of Moscow, U.S.S.R., assignors to Vsesojuzny Niftegazovy Nauchno-Issledovatelsky Institut, Moscow, U.S.S.R.

Filed April 30, 1969, Ser. No. 820,358
Int. Cl. G06g 7/48
U.S. Cl. 235—185 **3 Claims**



An analogue computer for the solution of non-linear boundary-value problems, comprising a controlled-resistor network adapted to simulate parameters of the medium under investigation, and units for setting initial and boundary conditions; connected to the controlled-resistor network are an integrator and a multi-variable non-linear function unit connected to the latter, said multi-variable non-linear function unit being connected with its input to the controlled-resistor network for simulating the non-linear dependence of the parameters of the medium under investigation upon the solution obtained, which perform a continuous re-adjustment of the controlled resistors in the network in order to obtain the solution of the non-linear boundary-value problem in the form of a continuous time function, the unit for setting initial conditions being connected to the input of the integrator.

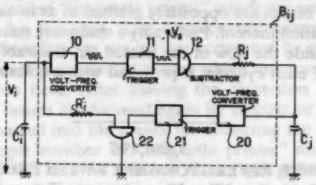
3,686,492

METHOD AND DEVICE FOR SIMULATING TRAFFIC

Daniel Falvert, Antony; Georges Giralt, Flourens Par Balma; Jean Clot, Montaudran, and Gerard Authie, Toulouse, all of France, assignors to Compagnie Generale D'Automatisme, Paris, France

Filed March 6, 1970, Ser. No. 17,104
Claims priority, application France, March 6, 1969, 6906330
Int. Cl. G06f 15/48; G06g 7/76
U.S. Cl. 235—184 **8 Claims**

The invention concerns the simulation of vehicle traffic along one or several paths. It is a method and device for the simulation of traffic in which an electrical analogy is used. Each section of track is represented by a capacitor. The number of vehicles in a section is represented by the charge of the capacitor, the density in a section is represented by the voltage on the capacitor, the flow in a section is represented by the current from one capacitor to the next. The invention is used, in a preferred application, for studying road traffic movements.

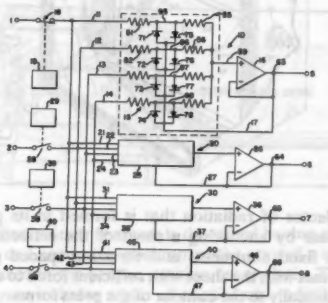


3,686,493

LIMITED AVERAGE VOTER CIRCUITRY

Hermann Schmid, Binghamton, N.Y., assignor to General Electric Company

Filed Nov. 13, 1970, Ser. No. 89,183
Int. Cl. H03k 19/42
U.S. Cl. 235—193 **13 Claims**



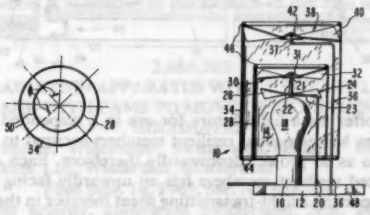
Electronic computer and control circuitry providing for redundancy by use of plural parallel channels and for selection of the proper output by limiting the difference between each input signal and the output signal and selecting an output based on the average of the limited signals. A specific analog circuit embodying the concept is described.

3,686,494

LIGHT DISPLAY APPARATUS

John J. Naylor, Oakland, Calif., assignor to Synergistic Systems, Inc., Oakland, Calif.

Filed Jan. 15, 1970, Ser. No. 3,175
Int. Cl. F21p 3/00; F21v 1/10
U.S. Cl. 240—10.1 **2 Claims**



Light display apparatus for providing a kaleidoscopic projection on a wall or surface. Concentric cylinders each including a rotor having a plurality of rotor blades associated

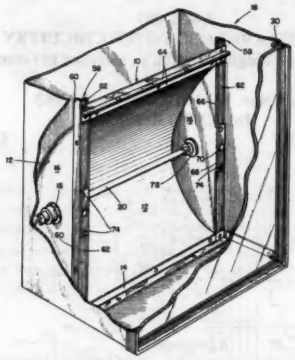
therewith are caused to be rotated in opposite directions. The rotation is caused by vertically rising air heated by a light source located within the concentrically arranged cylinders. The rotor blades are oppositely pitched so as to cause the opposite rotation thereof. Preferably a stationary stator is used to initially guide the flow of the heated air. Desirably, at least a portion of each cylinder is provided with a colored design or pattern.

3,686,495

TENSIONER REFLECTOR SHEET WITH PRESS FORMS

Richard C. Medley, Niles, Ill., assignor to Crouse-Hinds Company, Syracuse, N.Y.

Filed April 24, 1969, Ser. No. 818,883
Int. Cl. F21v 7/10
U.S. Cl. 240—41.35 E 6 Claims



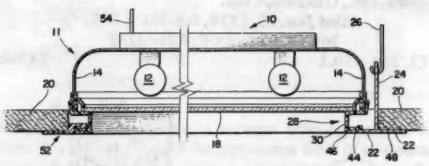
A reflector of radiation that is formed in its place of intended use by anchoring a sheet of the reflective material between fixed abutments and thrusting spaced press forms into contact with the sheet with sufficient force to conform the sheet elastically to the contour of the press forms.

3,686,496

LIGHTING TROFFER

Thomas Bernard Totten, Markham, and Robert Wilmer Gordon, Pickering, Ontario, both of Canada, assignors to Trels Industries Limited, Markham, Ontario, Canada

Filed July 21, 1970, Ser. No. 56,845
Claims priority, application Canada, Sept. 8, 1969, 061,364
Int. Cl. H05b 33/02
U.S. Cl. 240—51.11 R 7 Claims



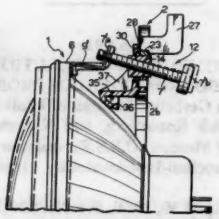
A troffer for a light fixture for use in a suspended ceiling structure has elongated resilient members secured to its side walls so as to project downwardly therefrom. Each of such elongated resilient members has an upwardly facing seating for supporting a light-transmitting sheet member in the troffer and an outwardly projecting lower flange for supported disposition on an adjacent flange of a conventional T-shaped strut of the ceiling structure, or as an alternate embodiment additional tile support adaptors may be coupled thereto for directly supporting adjacent ceiling tiles or panels.

3,686,497

ADJUSTABLE HEADLAMP

Salvatore Di Salvo, Via Tirreno 165, and Mario Collazuol, Via Isonzo 39, both of Turin, Italy

Filed July 9, 1971, Ser. No. 161,151
Int. Cl. B60g 1/06
U.S. Cl. 240—61.8 4 Claims



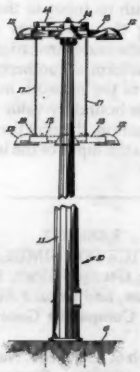
A headlamp adjusting device for motor vehicles is disclosed; the device is operable to adjust the inclination of the headlamps with respect to the horizontal to compensate for changes in angle of the vehicle under two different load conditions. The device comprises an adjustable support for one of the normal adjusting screws of the headlamp, the adjustable support being movable between two positions by means of a control member having two wedge section limbs which are moved between the adjustable support and a fixed member in one position of the control member to define one position of the headlamps, and moved out from between the adjustable support and the fixed member in the other position of the control member to define the other position of the headlamps, to which latter position the headlamp is biased by a spring.

3,686,498

REMOTE FIXTURE LOWERING DEVICE

Roy E. Meyer, Red Wing, Minn., assignor to Meyer Manufacturing, Inc., Red Wing, Minn.

Filed Jan. 20, 1971, Ser. No. 107,984
Int. Cl. F21s 1/10
U.S. Cl. 240—84 8 Claims

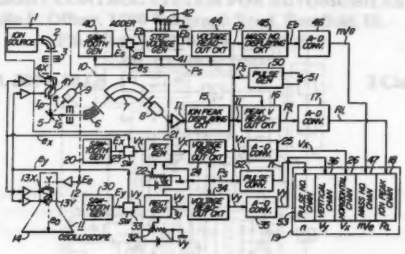


A tower supporting a light fixture at an elevated location on support cables trained over pulleys at the top of the tower and also suspending a counterweight which holds the fixture upwardly against the tower brackets. The counterweight being removably attached to the cables and also removably carrying a winch with a winch cable also removably attached to the support cables.

3,686,499
ION MICRO-ANALYZER

Itiro Omura, Hino; Toshio Kondo, Kokunbunji, and Hifumi Tamura, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 13, 1970, Ser. No. 36,755
Claims priority, application Japan, May 16, 1969, 44/37385
Int. Cl. H01j *37/26*
U.S. Cl. 250—41.9 ME **2 Claims**

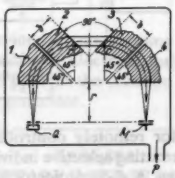


An ion micro-analyzer, wherein a finely collimated ion beam is projected onto the surface of a sample to be analyzed, the projected ion beam repeatedly scans the sample surface while, one time in fixed scanning-frequency intervals, a fixed point on the sample surface is bombarded by the ion beam for a constant time, the image of the secondary electrons from the sample surface is projected on the screen of a Braun tube oscilloscope sweeped synchronously with the ion beam and observed by performing intensity modulation of the oscilloscope in correspondence with the amount of the secondary electrons emitted from the sample surface, the fixed position on the sample surface bombarded by the ion beam in the way described above is moved to a position for analysis while observing the brilliant point on the image of secondary electrons which corresponds to the fixed point on the sample bombarded by the ion beam, and then a mass-spectroscopic analysis of the secondary ions emitted from the fixed point on the sample surface is done while the fixed position on the sample desired for analysis is bombarded by the ion beam.

3,686,500
MOMENTUM SPECTROMETER

Hans Kleinwachter, Kreuzstrasse 105, D-785 Lorrach/Baden, Germany

Continuation-in-part of Ser. No. 15,311, March 4, 1970, abandoned, which is a continuation of Ser. No. 551,790, May 20, 1966, abandoned. This application May 25, 1971, Ser. No. 146,649
Claims priority, application Germany, May 24, 1965, K 56203
Int. Cl. H01j *39/34*
U.S. Cl. 250—41.9 ME **11 Claims**

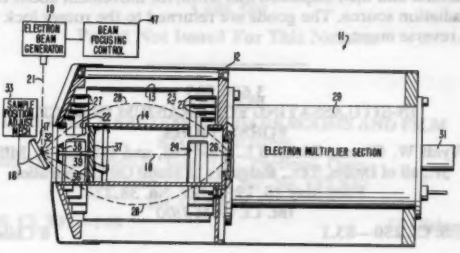


The invention relates to a magnetic mass spectrometer of very high dispersion and high resolving power. At the same time, the technical expenditure involved, especially the weight of the magnets and the physical dimensions of the magnets and of the vacuum chamber, are kept extremely small. The spectrometer comprises a special magnetic dispersion field with merely dispersing but no focusing properties. The dispersion field is made up of several magnetic homogeneous fields with straight, parallel field boundaries for the entrance and the exit of ions, called "magnetic prisms" which are successively transversed by the ions. The homocentric beams of ions emanating from the ion source are converted by electric or magnetic lenses into parallel beams which are conducted to the dispersion field. After leaving the dispersion field, the parallel ion beams are focused again by electric or magnetic lenses and passed into the means for collecting the ions. The use of a larger number of "magnetic prisms" successively traversed by the ions as outlined above will generated any desired degree of dispersion.

3,686,501
CHARGED PARTICLE ANALYZER WITH MEANS TO DETERMINE THE COORDINATE POSITION OF THE SAMPLE

Norman J. Taylor, Los Altos; Joseph K. Mann, Palo Alto, and Allen W. Atwood, Redwood City, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Sept. 28, 1970, Ser. No. 75,860
Int. Cl. G01t *1/36*
U.S. Cl. 250—49.5 AE **8 Claims**



A cylindrical mirror analyzer is described having apparatus for quickly and accurately positioning the area of a sample to be investigated at the proper position for analysis. The cylindrical analyzer includes a pair of coaxial and radially spaced apart cylinders and suitable mechanism for supporting a sample to be investigated on their common axis. Means are provided for forming in the space between the cylinders a charged particle deflecting field which will deflect towards the inner cylinder any charged particles within such space which have issued from the sample. Slots in the inner cylinder define a path for the passage of particles from the sample into the space between the cylinders for deflection and then back through the inner cylinder to the cylindrical axis where such particles are collected for analysis of their energy. A screen of fluorescent material is disposed at a location at which it will be activated by particles issuing from the sample because of the bombardment, and a shield is disposed between the fluorescent screen and the sample to project an unactivated or shadow area on the screen. The positional relationship of the shadow on the screen is indicative of the coordinate position of the area on the sample from which the radiation is emitted and, hence, is indicative of the location of the area under investigation.

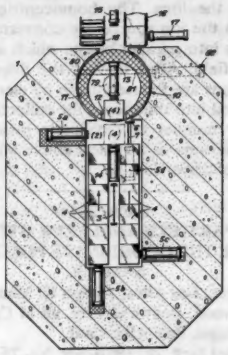
3,686,502
IRRADIATION APPARATUS WITH A ROTARY LOCK AND WITH CAMS TO MOVE OBJECTS TO BE IRRADIATED

Adolf Sieber, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Sept. 18, 1969, Ser. No. 858,954
Claims priority, application Switzerland, Sept. 20, 1968, 14147/68
Int. Cl. H01j *37/00*
U.S. Cl. 250—52 **8 Claims**

The goods to be irradiated are moved by fluid actuated rams into a rotary lock and then into a chamber where the goods

are moved about a radiation source by other fluid actuated rams. The goods are moved from the rotary lock in a forward



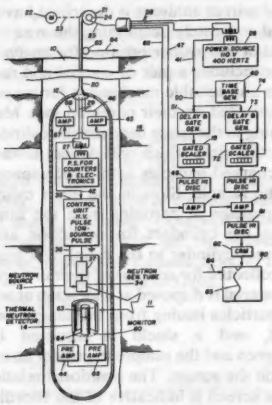
manner and then displaced therefrom for movement about the radiation source. The goods are returned to the rotary lock in a reverse manner.

3,686,503

IN-SITU ASSAYING FOR URANIUM IN ROCK FORMATIONS

Wyatt W. Givens; Richard L. Caldwell, and William R. Mills, Jr., all of Dallas, Tex., assignors to Mobil Oil Corporation

Filed May 18, 1970, Ser. No. 38,224
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 **8 Claims**



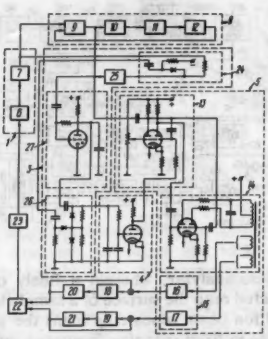
The specification discloses a technique for assaying for delayed fission neutrons from uranium to obtain a quantitative measure of uranium ore grade. In one embodiment, a pulsed neutron source of 14-Mev neutrons and a neutron detector are located in a borehole at the level of a formation of interest. The source is operated cyclically to irradiate the formations with bursts of fast neutrons, and the resulting neutrons from the formations are detected. Measurements are made of those neutrons detected between neutron bursts and indicative of delayed neutrons emitted as a result of neutron fission of uranium. Measurements also are obtained in a nonore-bearing formation to record the count of delayed neutrons emitted from oxygen when irradiated. These measurements are compared with those obtained in the ore-bearing formations of interest to correct for the effect of the oxygen background.

3,686,504

PHOTO-ELECTRIC OUTLINE-FOLLOWING APPARATUS FOR CONTROLLING THE MOVEMENT OF AN OPERATIVE UNIT

Shimon Abramovich Vainer, Logovskaya 43, kv. 21, and Savely Abramovich Vainer, Grodnenskaya 10, kv. 25, both of Volgograd, U.S.S.R.

Filed June 25, 1971, Ser. No. 156,654
Int. Cl. G06k *11/02*
U.S. Cl. 250—202 **3 Claims**



The invention relates to photo-electric outline-following apparatuses for controlling the movement of an operative unit.

The characteristic feature of the apparatus is that it comprises special units for automatic inertial correction of the outline-following errors. This ensures that in the process of outline-following scan diameter is constantly aligned with the drawing outline even when the parameters of the servo systems drift by a large amount due to the presence of disturbing factors.

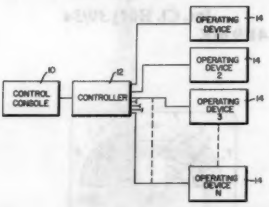
As a result the accuracy, dynamic and operating stability of the apparatus has been considerably improved so that apart from the traditional uses the apparatus can now be employed for automation of metal-cutting machines, conversion of information from graphical to digital form, etc.

3,686,505

APPARATUS FOR CONTROLLING PLURAL ELECTRICALLY ACTUATED OPERATING DEVICES

Louis De Pasquale, Flushing, N.Y., assignor to Visual Environments, Inc.

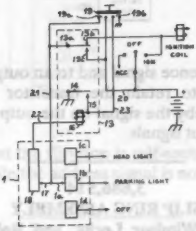
Filed Aug. 18, 1969, Ser. No. 850,706
Int. Cl. G01j *5/00*; G03b *21/26*; H03k *3/42*
U.S. Cl. 250—208 **7 Claims**



A control system for remotely controlling a plurality of operation devices, permitting selective individual actuation of those operating devices. A slide projector has its lens system replaced by a plurality of light-sensitive semiconductor devices. Each step of the control "program" comprises a card of a size to fit within the slide holder of the control projector and having openings corresponding to the light-sensitive semiconductor devices associated with those operating devices which are to be actuated at that step. Thus, those

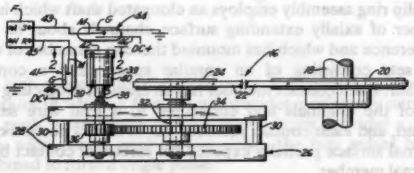
operating devices which are to be actuated for a particular program step have their associated light sensitive semiconductors illuminated while the program card for that program step is within the projection position of the control projector. The operating devices, by way of example, might be slide projectors, providing a composite visual display which can have portions of the display changed individually.

3,686,506
LIGHT CONTROL SYSTEM FOR AUTOMOBILES
Franklin F. Offner, 1890 Telegraph Road, Deerfield, Ill.
Filed Oct. 7, 1970, Ser. No. 78,679
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **2 Claims**



A control system for the lights of an automobile in which the electrical circuit for the lights is normally passed through the ignition switch so as to interrupt the lighting circuit whenever the ignition switch is turned to its "off" position. To enable the lights to be operated when the ignition switch is "off", an auxiliary switch is utilized which can be set to by-pass the lighting circuit from the light control switch around the ignition switch directly to the battery and this auxiliary switch is automatically reset whenever the light control switch is moved to its "off" position.

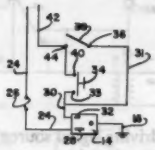
3,686,507
PULSING MECHANISM
Ronald L. Krutz, and Thomas J. Villella, both of c/o Gulf Research & Development Company, P.O. Drawer 2038, Pittsburgh, Pa.
Division of Ser. No. 815,838, April 14, 1969, Pat. No. 3,589,283. This application March 3, 1971, Ser. No. 120,647
Int. Cl. H03k *3/00*
U.S. Cl. 307—106 **7 Claims**



An improved device for transforming shaft rotation into a predetermined number of electrical pulses per shaft revolution, with means to prevent the creation of spurious pulses at the electrical pulse generator.

3,686,508
MOMENTARY IMPULSE CONTROL
Clairmont D. Arave, 224 Main St., Chadron, Nebr.
Filed Nov. 13, 1970, Ser. No. 89,282
Int. Cl. H01h *3/00*
U.S. Cl. 307—139 **2 Claims**

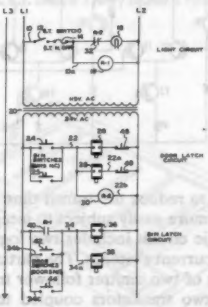
A momentary impulse control for fragmentary rotation of the drive motor of an electro-mechanical device such as an adding machine comprising a grounded electrical receptacle for the outlet cord of the electro-mechanical device, and outlet cord from the receptacle to a source of electricity, and an impulse control in one of the lines of the receptacle outlet cord including a toggle switch and a normally off, two point push-



button switch. A variable rheostat may be wired in the one line. A fuse or circuit breaker may be inserted in the other of the receptacle outlet lines. One or more additional controls may be wired in parallel to the first control for additional electro-mechanical devices.

3,686,509
Patent Not Issued For This Number

3,686,510
INTERLOCK SYSTEM FOR DARKROOMS AND FILM STORAGE BINS
Albert N. Korb, 549 N. Jarrett St., Portland, Oreg.
Filed June 14, 1971, Ser. No. 152,822
Int. Cl. H01h *47/22*
U.S. Cl. 307—149 **13 Claims**

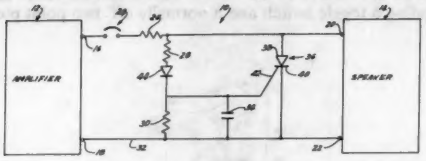


The interlock system interlocks an x-ray darkroom's entrance doors, white light system and x-ray film storage bin drawers so that (1) when a bin drawer is open, the entrance doors cannot be opened and the lights cannot be turned on, and so that (2) when either a door is open or a light is on, the bin drawers cannot be opened.

3,686,511
SPEAKER PROTECTIVE CIRCUIT
Walter W. Pauly, Teaneck, N.J., assignor to Stanton Magnetics, Inc., Plainview, L.I., N.Y.
Filed April 16, 1971, Ser. No. 134,703
Int. Cl. H02h *7/20;* **H03k** *5/08*
U.S. Cl. 307—202 **1 Claim**

A speaker protective circuit is provided designed to be interposed between the speaker transducer and driving signal source. The protective circuit includes a silicon controlled rectifier shunted across the transducer adapted to fire in

response to either repetitious, intermittent power surges or continuous high level surges and a circuit breaker in series



connection with the driving signal source adapted to open circuit in response to long duration power surges or a series of closely spaced short duration surges.

3,686,512

LOGIC CIRCUIT FOR PROVIDING A SHORT SIGNAL TRANSIT TIME AS AN INTEGRATED ELEMENT

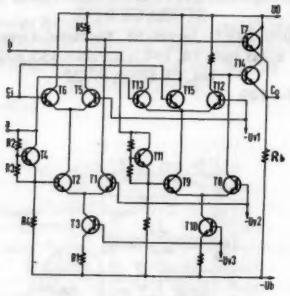
Friedrich-Karl Kroos, Soecking, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 7, 1970, Ser. No. 52,837

Claims priority, application Germany, July 11, 1969, P 19 35 356.1

Int. Cl. H03k *19/22*

U.S. Cl. 307—218 **1 Claim**



A logic circuit to reduce the transit time of a signal and to make the circuit more easily subject to integration as a single element. The logic circuit includes two logic partial circuits, each having two current switches. The partial circuits are coupled to the bases of two emitter follower transistors with the emitters of the two transistors coupled to a joint gate resistance and to an outlet clamp. The first partial circuit forms an AND linkage and the coupling of the two partial circuits of an additional transistor which is connected in parallel with one of the current switches of the second partial circuit forms an OR gate.

3,686,513

VOLTAGE RATIO CIRCUIT

Robert L. Miller, Horsham, Pa., assignor to Honeywell, Inc., Minneapolis, Minn.

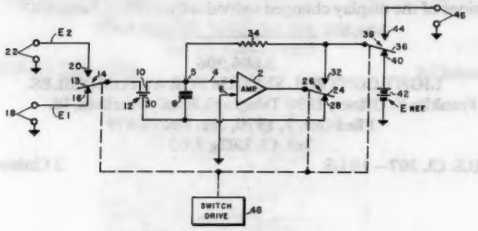
Filed Aug. 9, 1971, Ser. No. 170,031

Int. Cl. G06g *7/12*

U.S. Cl. 307—229 **3 Claims**

A ratio computing circuit for determining the ratio of two input signals by using a first input signal to preset the resistance of a field-effect transistor. The transistor resistance is connected to a summing junction algebraically summing a reference signal with a signal developed by the first input signal through the transistor resistance.

An input of an amplifier is connected to the summing junction while the amplifier output is used to control the transistor resistance to reduce the net signal to a zero level. A capacitor is used to store the output signal from the amplifier. A plurality of concurrently operated switching means are arranged to replace the first input signal with a second input signal while connecting an output of the amplifier to the summing junction



to replace the reference signal and to an output terminal. The capacitor is used to retain the transistor resistance at its former value whereby the signal on the output terminal is the ratio of the two input signals.

3,686,514

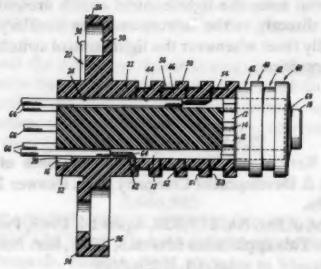
SLIP RING ASSEMBLY

Milford J. Dube, Windsor Locks, and Robert A. Semrow, Southington, both of Conn., assignors to The J. M. Ney Company, Bloomfield, Conn.

Filed July 16, 1971, Ser. No. 163,381

Int. Cl. H01r *39/08*

U.S. Cl. 310—232 **7 Claims**



A slip ring assembly employs an elongated shaft which has a number of axially extending surface channels about its circumference and which has mounted thereon a number of contact sets consisting of an annular spacer and a contact member. Each contact member has an element projecting into one of the channels and connected to a lead wire seated therein, and each contact member has at least a portion of its external surface partially exposed for electrical contact by an external member.

3,686,515

SEMICONDUCTOR MEMORY

Shinji Kadono, Hatano, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

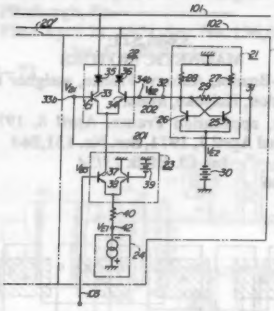
Filed Dec. 24, 1970, Ser. No. 101,293

Int. Cl. H03k *17/00*

U.S. Cl. 307—238 **9 Claims**

A low power consuming semiconductor memory in which a pair of input/output terminals of a flip-flop are connected with the bases of a pair of transistors the collectors of which are connected to a pair of digit lines. The emitters of the transistors are connected in common with a constant current source through a current switching type semiconductor

switching circuit which is adapted to be closed or opened in response to application or non-application thereto of an address signal, so that the flip-flop is self-sustained by its proper voltage source while the address signal is not present.



3,686,516

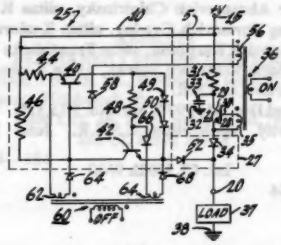
HIGH VOLTAGE PULSE GENERATOR

Robert Noel Guadagnolo, Alhambra, Calif., assignor to RCA Corporation

Filed Jan. 15, 1971, Ser. No. 106,676

Int. Cl. H03k *3/12, 5/00*

U.S. Cl. 307—263 **1 Claim**



A high power, fast rise time pulse is provided by a pulse generator in which a first circuit provides a relatively narrow, high peak power pulse and a second circuit provides a relatively wide, lower peak power pulse, the two pulses being combined to form a single pulse.

3,686,517

TEMPERATURE COMPENSATION MEANS FOR ELECTRONIC CIRCUIT

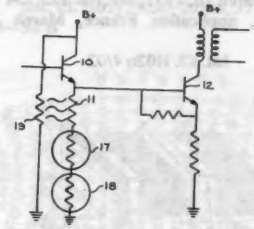
Charles W. Sexton, Jr., Virginia Beach, Va., assignor to General Electric Company

Filed Sept. 2, 1971, Ser. No. 177,254

Int. Cl. H03k *17/00*

U.S. Cl. 307—310 **8 Claims**

Temperature compensation means including a pair of series-connected thermisters which provide an offset voltage for an output transistor. A first thermistor is placed in close thermal relationship with a circuit element which rapidly attains its normal operating temperature, while a second thermistor is located in the general environment of the transistor and associated circuitry such that its temperature is substantially tracks the temperature of the transistor. The combined characteristics of the two thermistors so disposed produce a voltage-temperature characteristic which substantially parallels that of the voltage drop across a junction of the output transistor.



3,686,518

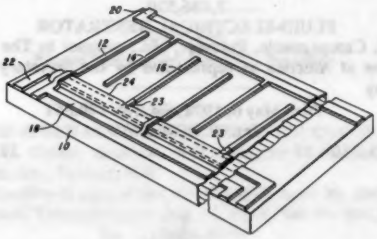
UNIDIRECTIONAL SURFACE WAVE TRANSDUCERS

Clinton S. Hartmann, 8923 Clearwater Drive, Dallas, Tex., and William S. Jones, 427 Beverly Drive, Richardson, Tex.

Filed Sept. 2, 1970, Ser. No. 69,081

Int. Cl. H01v *7/00;* **H04r** *17/00*

U.S. Cl. 310—9.8 **11 Claims**



Disclosed is a unidirectional interdigitated surface wave transducer having at least three discrete arrays of conductive elements, each array comprising, in a comb-like structure, a plurality of electrodes electrically interconnected in parallel and having a periodicity corresponding to one acoustic wavelength of the resonance frequency of the transducer. The discrete arrays of electrodes are deposited upon a piezoelectric substrate in an interleaved pattern to define an interdigitated transducer. Respective electrodes of a given array are substantially equidistantly spaced apart from electrodes of the other arrays and are electrically insulated therefrom. The arrays of electrodes are positioned upon the substrate such that there are at least three electrodes per acoustic wavelength at the resonance frequency. A voltage of different phase is simultaneously applied to each array of electrodes by means of novel broadband phase shifting circuits to generate an acoustic wave that propagates in only one direction along the substrate.

3,686,519

MHD-GENERATOR ELECTRODE WHICH IS INSENSITIVE TO THE ACTION OF ALKALI-METAL SEED MATERIAL

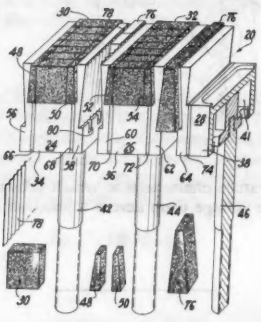
Henri Blattmann, 8 route de Vauhallan, 91 Igny; Jean Javelaud, Le Grand Sentier, 91 Chilly-Mazarin, and David Yerouchalmi, 3 rue de l'Ile de France, 78 Le Mesnil-Saint-Denis, all of France, assignors to Commissariat A L'Energie Atomique

Filed March 18, 1971, Ser. No. 125,734

Claims priority, application France, March 25, 1970, 7010731

Int. Cl. H02n 4/02

U.S. Cl. 310—11 2 Claims



A composite electrode for MHD conversion ducts is constituted by identical elements in juxtaposed relation, each main element being made up of ceramic blocks assembled in a metallic support and each block being essentially made up of a current-collecting ceramic element which is placed between two heat-insulating ceramic elements. The electrode is unaffected by the corrosive action of molten alkali-metal seed material within the duct.

3,686,520

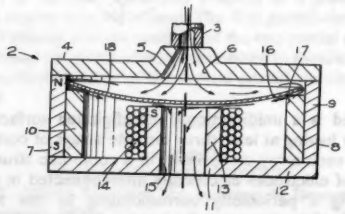
FLUID-ELECTRICAL GENERATOR

Carl J. Campagnuolo, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed May 6, 1971, Ser. No. 140,851

Int. Cl. H02k 35/06

U.S. Cl. 310—15 12 Claims



A fluid-electrical generator which employs the concept of pneumatic to electrical energy transformation to generate electrical energy. In the device, air impinges on a metal diaphragm which vibrates or modulates within a magnetic field created by a ring magnet which in turn surrounds a coil. The coil picks up an electromotive force from the action of the diaphragm vibrating in the magnetic field. With the introduction of air, a pressure build-up occurs within the cavity created by the ring magnet and the diaphragm. The pressure builds up until it breaks the magnetic lock and causes the diaphragm to distort and break loose off the top surface of the magnet to allow air to escape around its periphery, thus relieving the pressure. As the pressure escapes, the magnetic force becomes larger than the pressure within the cavity and the magnet re-attracts the diaphragm, thus creating another pressure build-up. As this process continues, it becomes cyclic, thereby creating an alternating current.

3,686,521

MAGNETIC MOTORS

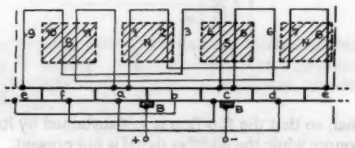
Jacques Henry-Baudot, Antony, France, assignor to Kollmorgen Corporation, Holyoke, Mass.

Claims priority, application France, April 8, 1970, 7012673

Filed April 7, 1971, Ser. No. 131,864

Int. Cl. H02k 23/54

U.S. Cl. 310—46 8 Claims



An electromagnetic motor operating from relative attractions and repulsions between inductor poles and winding coils of a commutator supplied armature, having $2p$ inductor poles on one face of an airgap, p being a number higher than one, $2n$ winding coils, n being a number higher than p though not being a multiple of p, and $2n$ commutator blades.

3,686,522

ROTOR WITH A LIQUID-COOLED WINDING FOR AN ELECTRICAL MACHINE

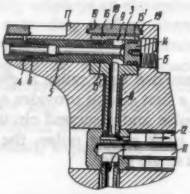
Boris Leonidovich Konovalov, 603 Mikroraion, I, kv. 346; Evgeny Khaimovich Glider, Prospekt Ordzhonikidze, 18, kv. 55; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, II, kv. 8; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. I; David Bentsionovich Karpman, ulitsa Frantisheka Krala, 49, kv. 54, and Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55, all of Kharkov, U.S.S.R.

Filed Dec. 31, 1970, Ser. No. 103,129

Claims priority, application U.S.S.R., June 15, 1970, 1438401

Int. Cl. H02k 9/00

U.S. Cl. 310—54 5 Claims



A rotor with a liquid-cooled winding for an electrical machine, in which a distribution manifold for a liquid coolant is located in the rotor shaft and is made up of separate replaceable insert elements which have a higher resistance to corrosion than the rotor shaft material, the rotor being provided with axial passages connected with liquid inlet or outlet ducts with the help of radial ducts.

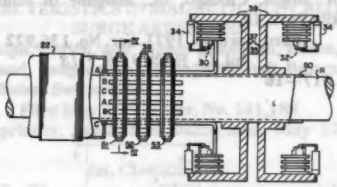
The corrosion-resistant elements may be secured in the shaft with the help of projections, wedges or a band ring and have axial apertures. The axial apertures in said elements are coaxial with the axial passages of the rotor shaft and accommodate sealing and insulating elements.

3,686,523

DYNAMOELECTRIC MACHINE APPARATUS, SUCH AS BRUSHLESS EXCITER FOR A. C. GENERATOR, WITH FLEXIBLE TAPE CAPACITIVE MEANS

Dale I. Gorden, North Versailles, and Lee W. Smart, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 21, 1971, Ser. No. 136,057
Int. Cl. H02k 11/00
U.S. Cl. 310—72 8 Claims



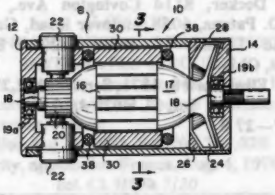
A capacitor tape is applied over the shaft of a brushless exciter and is connected to provide interphase capacitance with or without an additional resistive tape connected in series with each capacitor to provide damping resistance. The voltage suppressor functions of the capacitors can also be obtained by winding a tape to provide a distributed capacitance directly in the A.C. exciter winding. A flexible capacitive tape in accordance with this invention can be variously applied in dynamoelectric machine apparatus.

3,686,524

PERMANENT MAGNET MOTORS

George D. Hall, Verona, Pa., assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 28, 1970, Ser. No. 84,799
Int. Cl. H02k 21/28
U.S. Cl. 310—154 6 Claims



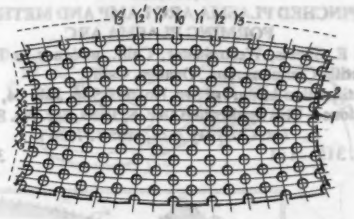
Permanent magnet motors having improved power output to size ratios, which include a casing of magnetically soft material, permanent magnets housed in the casing, an armature surrounded by the permanent magnets so dimensioned that the ratio of its diameter to the exterior casing diameter is substantially closer to the optimum than in heretofore available permanent magnet motors, and an arrangement for preventing demagnetization of the permanent magnets when the flux generated in the armature is greater than the flux which the permanent magnets can withstand without beginning to demagnetize.

3,686,525

CATHODE RAY TUBE HAVING SHADOW MASK APERTURES ALIGNED ALONG CURVED HORIZONTAL AND VERTICAL LINES

Yohsuke Naruse; Ryosuke Ashiya; Takehiko Nii, and Yuzo Fuse, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 27, 1970, Ser. No. 41,009
Claims priority, application Japan, May 31, 1969, 44/42142
Int. Cl. H01j 29/30, 25/06, 31/20
U.S. Cl. 313—92 B 4 Claims



In a cathode ray tube having a curved phosphor screen, a shadow mask having bored therein apertures and electron beam generating means for generating three in-line electron beams aligned in a horizontal direction, the apertures of the shadow mask are aligned along barrel-shaped lines extending in a horizontal direction and are aligned along pin-cushioned lines extending in a vertical direction and the diameter distribution of the apertures is arranged so that the distribution of the electron beam transmission factor of the mask is concentric about the center of the mask.

ERRATUM

For Classes 310—232 see:
Patent No. 3,686,514

3,686,526

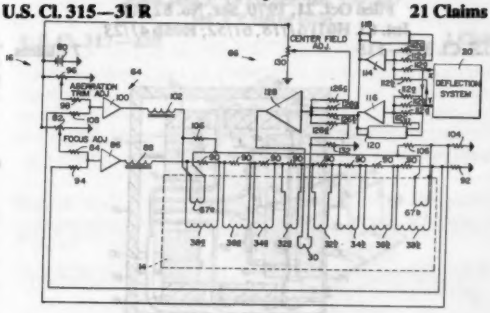
Patent Not Issued For This Number

3,686,527

HIGH-SPEED SYNTHESIZED FIELD FOCUS COIL

William D. Gabor, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 724,893, April 29, 1968, abandoned. This application Dec. 12, 1969, Ser. No. 884,714
Int. Cl. H01j 29/66
U.S. Cl. 315—31 R 21 Claims



A high speed magnetic focus lens develops a relatively large static magnetic force field which has radial symmetry and which varies along the axis of an electron beam and radially outwardly therefrom so as to focus off-axis electrons to the same focal point on a cathode ray tube screen, thereby

producing a visible spot characterized by minimum distortion and aberration and therefor which is very small. The lens also develops a smaller dynamic field component which varies with beam deflection so as to maintain the beam in focus with minimum aberration, even though the beam is deflected through relatively large angles while moving over the screen. The static and dynamic elements of the lens are electrically isolated so as to minimize the time constant associated with dynamic focusing, thereby enabling the lens to focus a beam moving at high speed.

3,686,528

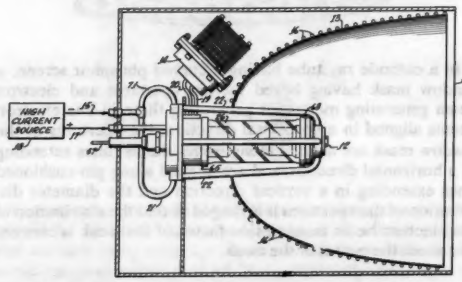
JET PINCHED PLASMA ARC LAMP AND METHOD OF FORMING PLASMA ARC

Ronald E. Sheets, Westminster, Calif., assignor to Tamarack Scientific Company, Inc., Orange, Calif.

Continuation-in-part of Ser. No. 655,536, July 24, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 882,587

Int. Cl. H01j 7/24; H05b 31/26

U.S. Cl. 315—111 **35 Claims**



A plasma arc is generated between an anode and a cathode in a gas pressurized chamber. The plasma arc is stabilized to give greater safety and concentrated to give greater irradiance by a jet of gas coaxial with and pinching the plasma arc. Means are employed for greatly reducing heat flux through the face of the anode. The gas jet is created by forcing the gas through a nozzle type opening positioned at one of the electrodes and antipodal the other of the electrodes, while a second gas flow cools the chamber walls. The gas is recirculated through a purifying medium to avoid contamination.

3,686,529

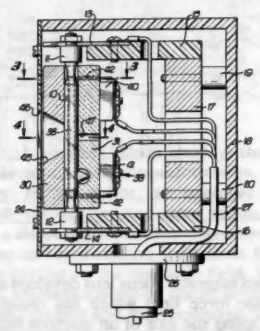
STABLE GLOW DISCHARGE LIGHT SOURCE WITH CLOSE TEMPERATURE CONTROL FOR SHARP RESONANCE LINES

Steven H. Boland, Temple City, Calif., assignor to Ultra-Violet Products Inc., San Gabriel, Calif.

Filed Oct. 21, 1970, Ser. No. 82,700

Int. Cl. H01j 61/18, 61/52; H05b 41/23

U.S. Cl. 315—115 **7 Claims**



A stable source for a light producing sharp resonance lines. A glow discharge lamp with a solid metal or metallic halide charge and operated at a controlled elevated temperature to provide the desired controlled output. Separate power supplies for the lamp current and the lamp heat so that the operating temperature is independent of the operating current.

ERRATUM

For Class 315—357 see:
Patent No. 3,686,683

3,686,530

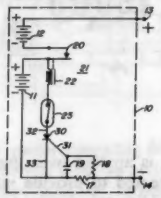
CURRENT LIMITED BATTERY PACK

Henry A. Bogut, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed April 23, 1971, Ser. No. 136,922

Int. Cl. H02h 3/08, 7/18

U.S. Cl. 317—16 **17 Claims**



A battery pack includes a resettable protection circuit for limiting the current to a load, which includes a normally nonconductive silicon controlled rectifier and a magnetic reed switch serially connected across a battery. When excessive load current develops, the silicon controlled rectifier is rendered conductive which in turn cuts off a regulating transistor or energizes a relay to prevent current flow to the load. The battery, magnetic reed switch, silicon controlled rectifier and regulating transistor or relay are encased in a sealed container to prevent sparks and arcing and allow usage in a hazardous atmosphere. The silicon controlled rectifier is reset, to allow continued usage of the battery, by actuating the reed switch with an externally supplied magnetic field. Actuation of the reed switch breaks the current path to the silicon controlled rectifier.

3,686,531

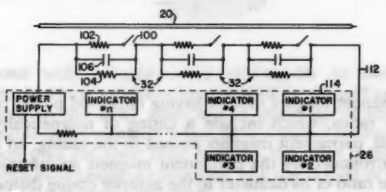
FAULT LOCATING SYSTEM FOR ELECTRICAL CIRCUITS

Robert M. Decker, 8114 Covington Ave., Parma, Ohio; Michael D. Patena, 6058 Andover Road, Garfield Heights, Ohio, and Thomas G. White, 12974 Emerson Ave., Lakewood, Ohio

Filed April 8, 1971, Ser. No. 132,271

Int. Cl. H02h 3/30

U.S. Cl. 317—27 R **7 Claims**



A fault locating system for electrical circuits consisting of three major components, a fault sensor, a control circuit or channel, and an indicating device. The fault sensors indicate an abnormal current flow when a fault occurs and transmit the information through the control circuit or channel to the in-

dicating device which in turn displays the information. The control circuit connects the fault sensors in series or parallel, and the sensors are oriented in spaced relationship along the cable or electrical circuit being monitored so that fault detection between adjacent sensors is determined by the indicating device. The system may be set up for automatic resetting. The preferred sensor is a magnetic reed switch, and the fault indicator preferably incorporates a circuit with fast response.

3,686,532

APPARATUS FOR INCREASING THE ARC VOLTAGE IN RELATION TO THE PARTICULAR NUMBER OF SPARK GAPS WHICH DEFINE THE THRESHOLD CHARACTERISTICS IN MAGNETICALLY BLOWN SURGE ARRESTORS

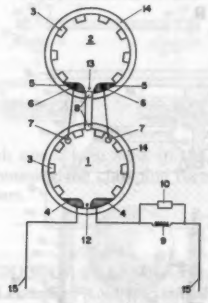
Rene Rudolph, Zurich, and Tjhing Thian Tan, Baden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland

Filed May 7, 1971, Ser. No. 141,188

Claims priority, application Switzerland, May 12, 1970, 7011/70

Int. Cl. H02h *9/06*

U.S. Cl. 317—70 **8 Claims**



A magnetically blown surge arrester is comprised of a plurality of superposed arc chambers each including a pair of spaced horns providing a sparkover gap. The horns of a lower chamber are provided with projections which extend into the chamber next-above that are contacted by the arc as it is blown after being struck between the horns of the latter chamber, and the arc is then struck between the horns in the lower chamber following a passage of charge carriers from the upper to the lower chamber.

3,686,533

HEAT SINK MOUNTING ARRANGEMENT FOR INTEGRATED CIRCUITS

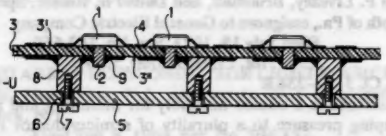
Michel Garnier, Lannion, and Jacques Bigou, Lezardrieux, both of France, assignors to Societe Lannionaise D'Electronique, Lannion, France

Filed Aug. 4, 1971, Ser. No. 169,028

Claims priority, application France, Aug. 4, 1970, 7028791

Int. Cl. H05k *7/20*

U.S. Cl. 317—100 **6 Claims**



Mounting arrangement for integrated circuits having cooling pins protruding therefrom which also provide for the connection of a power source to the circuits, the pins protruding through a printed circuit board to a side thereof having a plurality of conductive studs which are soldered to the protruding pins, and a metal plate being removably secured to the ends of the conductive studs.

3,686,534

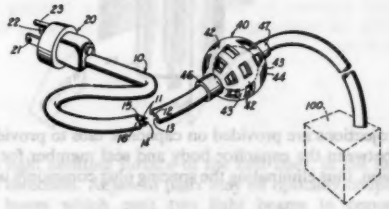
FLOAT CONTROLLED CIRCUIT BREAKER MEANS

Vernon W. Cook, Jr., P.O. Box 266, Pearson, Ga.

Filed April 21, 1971, Ser. No. 136,098

Int. Cl. H01h *47/22*

U.S. Cl. 317—123 **11 Claims**



A float controlled circuit breaker means operatively associated with an electrical cord capable of conducting electrical current to an electrically operable utilization means wherein the float controlled circuit breaker means is operable for interrupting a flow of current through the cord in response to the liquid level in an area reaching a predetermined elevation. The electrical cord includes circuit means supported therein for conducting an electrical current therethrough and having connector means on one end of the cord whereby the cord can be easily connected to an electrical power supply source. A float control means is affixed to the cord at a predetermined spacing there along and includes a float element operatively associated with a switch means supported in the connector means. The float element being operable for moving the switch means to an inoperable position to interrupt the flow of current in response to the liquid level in an area reaching a predetermined elevation. The switch means includes reset means operatively associated therewith for returning the switch means to an on current conducting position.

3,686,535

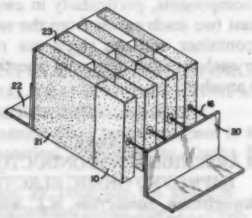
ELECTROLYTIC CAPACITOR WITH SEPARATE INTERCONNECTED ANODE BODIES

John Piper, Greenville, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 2, 1971, Ser. No. 159,267

Int. Cl. H01g *9/08*

U.S. Cl. 317—230 **1 Claim**



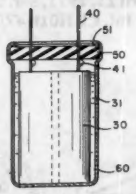
A capacitance device having improved high frequency characteristics comprising a plurality of solid tantalum capacitor units arranged in parallel with both anode and cathode connection made to strip-like terminals.

3,686,536

CAPACITOR HAVING A SEALING MEANS ENGAGING THE TERMINALS

Godfrey R. Pearce, Route #2, and William J. Breeden, 101 St. Charles Court, both of Glasgow, Ky.

Filed Sept. 13, 1971, Ser. No. 179,750
Int. Cl. H01g 9/10
U.S. Cl. 317—230 10 Claims



Projections are provided on capacitor tabs to provide spacing between the capacitor body and seal member for gas expansion, thus eliminating the spacing plug commonly used.

3,686,537

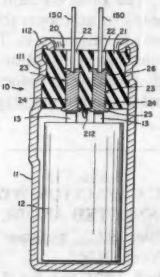
Patent Not Issued For This Number

3,686,538

ELECTRICAL COMPONENT HAVING TERMINAL INSERT SEAL

Robert A. Webster, Route 4, Huntsville, Ala.

Filed Nov. 2, 1971, Ser. No. 194,979
Int. Cl. H01g 9/10
U.S. Cl. 317—230 14 Claims



A rivet is utilized for both internal and external contact in electronic components, particularly in electrolytic capacitor seals. At least two leads egress from the same opening in the capacitor container and the rivets are recessed within an elastomeric seal member to avoid shorting the lead wires against one another.

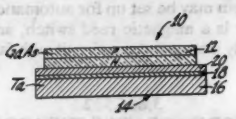
3,686,539

GALLIUM ARSENIDE SEMICONDUCTOR DEVICE WITH IMPROVED OHMIC ELECTRODE

Stanley Schwartzman, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,448
Int. Cl. H01l 1/14
U.S. Cl. 317—234 R 7 Claims

A semiconductor device comprising of semiconducting body of gallium arsenide bonded to an ohmic electrode. The ohmic electrode comprises a tantalum body with a layer of palladium united to it, and with a layer of bonding material united to the palladium and joining the electrode to the



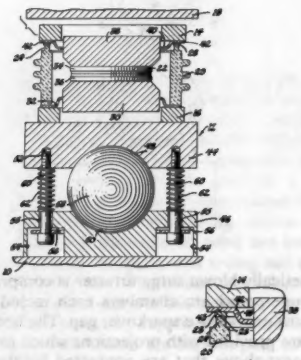
semiconductor. The electrode may also be bonded to other semiconductors having a similar coefficient of expansion.

3,686,540

COLD WELDED-CERAMIC SEMICONDUCTOR PACKAGE

Thomas J. Furnival, Logansport, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1970, Ser. No. 60,261
Int. Cl. H01l 5/00, 3/00
U.S. Cl. 317—234 R 3 Claims



A hermetically sealed enclosure for a semiconductor device and a method and apparatus for making same is disclosed. A tubular ceramic housing is provided with an integral die on one end. A cold weldable layer is brazed on the integral die. A first cover member is brazed onto the other end providing a hermetic seal there. A second cover member is cold welded to the layer hermetically sealing the one end. The cold welding apparatus includes a pressure equalizing assembly having a pair of spaced resiliently coupled elements with facing hemispherical recesses. One of the elements slides on a bearing ball nested within the recesses to equalize the compressive forces of the cold welding around the end of the housing.

3,686,541

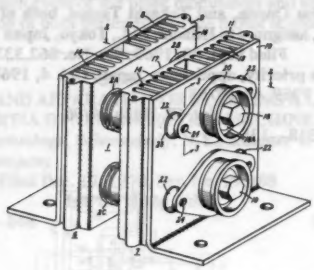
FLEXIBLE RESILIENT MEMBER FOR APPLYING A CLAMPING FORCE TO THYRISTOR UNITS

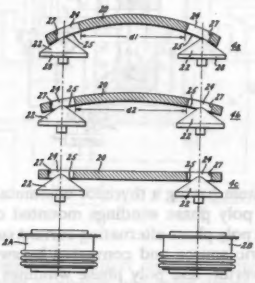
John P. Livezey, Broomall, and Daniel B. Rosser, Springfield, both of Pa., assignors to General Electric Company

Filed July 19, 1971, Ser. No. 163,660
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 5 Claims

Disclosed is a cooled assembly for mounting and applying clamping pressure to a plurality of semiconductor rectifiers and for electrically connecting them in parallel. The pressure is applied via a pair of heat dissipating electrodes disposed on opposite sides of the rectifiers. Each electrode contains a plurality of heat dissipating fins. Clamping means including a tie

bolt with leaf springs thereon apply the clamping forces through the heat dissipating electrodes to the rectifiers. Means





are provided which coact with slots in the leaf springs for directing and maintaining the clamping force on the axes of the clamped rectifiers.

3,686,542

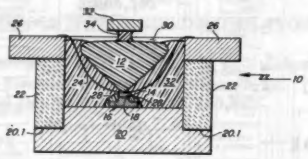
SEMICONDUCTOR TRANSDUCER DEVICE

Wilhelm Rindner, Lexington; Americo Iannini, Marlboro, and Andre Garfein, Brighton, all of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Division of Ser. No. 738,315, June 19, 1968, Pat. No. 3,566,459. This application Nov. 23, 1970, Ser. No. 91,642

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **5 Claims**



According to the invention, there is disclosed a miniature electromechanical junction transducer, the operation of which is based on piezojunction effect. The mechanical imput coupling member, in the subject invention, as distinguished from the prior art, is formed in situ and is spread over the top of the mesa structure to form an exact duplicate of the mesa surface at the area of contact.

3,686,543

ANGLED ARRAY SEMICONDUCTOR LIGHT SOURCES

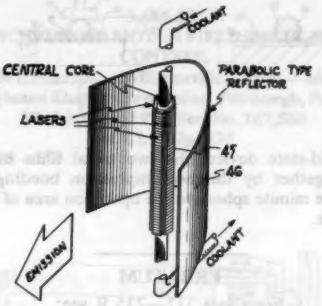
Paul Nyul, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1968, Ser. No. 704,152

Int. Cl. H01s *3/18*; H01l *15/00*

U.S. Cl. 317—235 N **22 Claims**

A light emitting array consisting of a number of prismatically shaped injection type light emitting diodes arranged in angled pairs. Light emitted from a surface of one laser of each pair is reflected from an adjacent surface of the other laser of the pair in a specified direction; similarly, light emitted from the adjacent surface of the other laser of the pair is reflected



from the light emitting surface of the first laser, in the same specified direction. Adjacent pairs may be optically coupled, utilizing lasers which emit two light beams in opposite directions, to lower the current threshold of the array and to increase its efficiency.

3,686,544

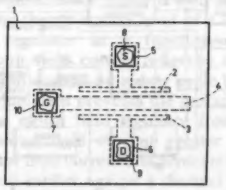
MOSFET WITH DUAL DIELECTRIC OF TITANIUM DIOXIDE ON SILICON DIOXIDE TO PREVENT SURFACE CURRENT MIGRATION PATH

Peter Edward Steigman, Cottingham; Frank Robert Badcock, Harrow, Middlesex, and David Robert Lamb, Hanworth, Middlex, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 797,964

Int. Cl. H01l *11/14*

U.S. Cl. 317—235 R **5 Claims**



An insulated gate field effect transistor is described having a titanium dioxide surface layer over the usual insulating layer to interrupt surface charge migration between its source and drain.

3,686,545

IMPROVEMENT IN A MECHANICAL FORCE-TO-ELECTRIC SIGNAL TRANSDUCER HAVING A LIQUID BODY PRESSING MEMBER

Masami Shoji, Takatsuki-City, Japan, assignor to Matsushita Electronics Corporation, Kadoma City, Osaka Prefecture, Japan

Filed Dec. 29, 1969, Ser. No. 888,226

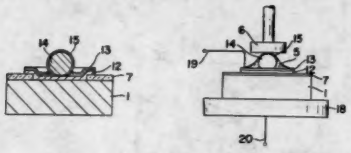
Claims priority, application Japan, Dec. 27, 1968, 44/437

Int. Cl. H01l *11/00, 15/00*

U.S. Cl. 317—235 R **11 Claims**

A pressure sensitive electric transducer including a solid-state device whose electric characteristics vary in response to application of an input pressing force to an operation area thereof by a rigid body pressing member in the form of a minute sphere. The pressure receiving area of the solid-state

device is provided with a soft metal film and the rigid body pressing member is provided with a metal film capable of forming a eutectic alloy with the soft metal film on the surface



of the solid-state device, the two metal films then being bonded together by thermo-compression bonding thereby bonding the minute sphere to the operation area of the solid-state device.

ERRATUM

For Class 317—235 R see:
Patent No. 3,686,684

3,686,546

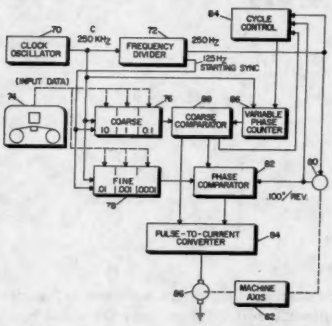
Patent Not Issued For This Number

3,686,547

NUMERICAL FINE-COARSE POSITIONING CONTROL SYSTEM

Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company

Filed Oct. 21, 1969, Ser. No. 868,124
Int. Cl. G05b *11/18*
U.S. Cl. 318—594 **13 Claims**



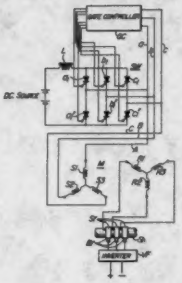
A numerical positioning control system using a single feedback transducer which is coupled to the controlled machine axis. The transducer has a relatively small scale factor, substantially less than the total amount of travel of the controlled machine tool axis, and is monitored by a cycle control unit which generates output signals so as to control the phase of a phase varying means such as a variable phase digital counter. The output of the variable phase digital counter then represents a second phase varying signal which has a scale factor larger than the scale factor of the feedback transducer. Input data is fed into the system and is used to vary the phase of digital counters which are then phase compared with the phases of the feedback transducer and the phase varying means. The results of these comparisons are used to control the driving means which ultimately operate to move the controlled machine axis in a direction and at a speed related to the difference between the actual position of the controlled machine axis and the desired position as indicated by the input data.

3,686,548

MOTOR SYSTEM HAVING A THYRISTOR COMMUTATOR

Yoshimitsu Onoda, and Takashi Tsuboi, both of Katsuta-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 30, 1969, Ser. No. 862,333
Claims priority, application Japan, Oct. 4, 1968, 43/71817; June 23, 1969, 44/49755
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **11 Claims**



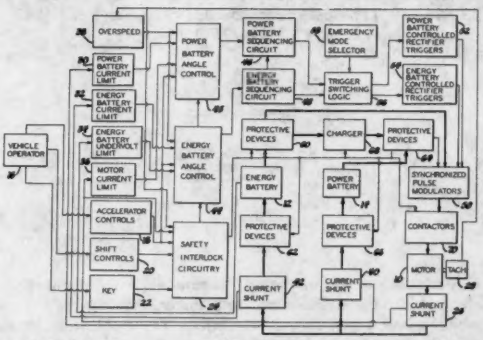
A motor system having a thyristor commutator which is so designed that poly phase windings mounted on a stator are energized by a poly phase alternating current supplied from an optional electric source and converted by switching means, such as an inverter, and poly phase windings mounted on a rotor are excited by a given frequency poly phase alternating current converted by a frequency changer, such as a cycloconverter.

3,686,549

POWER CONTROL SYSTEM

Gary L. Winebrener, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 1, 1971, Ser. No. 111,181
Int. Cl. H02p *1/00*
U.S. Cl. 318—139 **5 Claims**



A primary battery or energy battery and a secondary battery or power battery are connected through a pair of synchronized pulse modulators with a drive motor in the vehicle electric drive power supply system of this invention. The energy battery alone supplies power to the drive motor when power, voltage, current, and speed parameters of the electric drive are each within a first predetermined range of values. If one or more of the measured parameters is within a second predetermined range of values, power from the power battery complements power from the energy battery to supply the motor. According to the invention, when the two batteries are jointly supplying the motor, each battery is sequentially and periodically connected with the motor through its respective

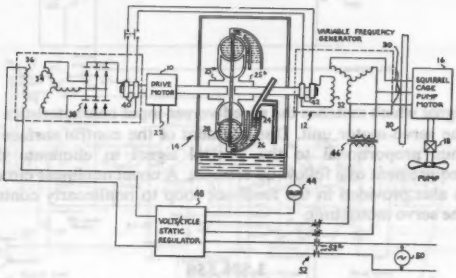
pulse modulator such that each battery has a variable duty cycle; however, conduction by the batteries is complementary in time within each cycle of the pulse modulators and simultaneous connection of both batteries with the motor is precluded.

3,686,550

METHOD AND APPARATUS FOR STARTING A LARGE INERTIA DYNAMOELECTRIC MACHINE

Paul Gene Cummings, Schenectady, N.Y., assignor to General Electric Company

Filed Dec. 17, 1970, Ser. No. 99,088
Int. Cl. H02p 9/06
U.S. Cl. 318—148 **9 Claims**



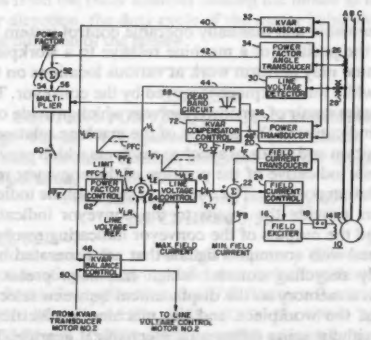
A 9,000 horsepower squirrel cage pump motor is started utilizing a variable frequency generator driven by a constant speed drive motor through an adjustable speed transmission. During the starting procedure, the generator initially is run without an applied field at a speed of approximately 50 percent rated speed whereupon voltage is applied to the generator field winding. The generator then picks up load thereby reducing the generator speed to a level at which the generator output exceeds the required break-away power of the pump motor, i.e., between 5 and 25 percent of rated generator speed. The speed of the generator and pump motor then increases to a value determined by the adjustable speed fluid transmission setting whereupon the speed of the generator and pump motor is increased to the desired operational level by increasing the coupling in the fluid drive.

3,686,551

SYNCHRONOUS MOTOR FIELD REGULATOR CONTROL

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,587
Int. Cl. H02p 7/36
U.S. Cl. 318—174 **8 Claims**



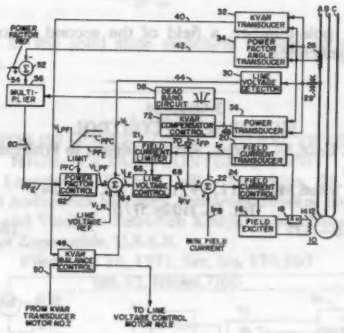
A synchronous motor field regulator system which regulates for a specific power factor within a predetermined line voltage band, providing that a minimum excitation requirement for the load on the synchronous motor is met. KVAR balance control is also provided for two synchronous motor regulated drives connected to the same line.

3,686,552

SYNCHRONOUS MOTOR FIELD REGULATOR CONTROL

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,588
Int. Cl. H02p 7/36
U.S. Cl. 318—174 **7 Claims**



A synchronous motor field regulator system which regulates for a specific power factor within a predetermined line voltage band, providing that a minimum excitation requirement for the load on the synchronous motor is met, and incorporating means for varying the saturation level of a line voltage controller in the regulator as a function of the average synchronous motor field current whereby the synchronous motor average field current on a duty cycle basis will not exceed its rated value. This prevents the line voltage controller in a synchronous motor field regulator from calling for an average synchronous field current greater than the rated synchronous motor field current and protects the synchronous motor and its field exciter against a thermal overload condition when the synchronous motor voltage has dipped for a long period of time and the line voltage regulator is trying to maintain nominal line voltage.

3,686,553

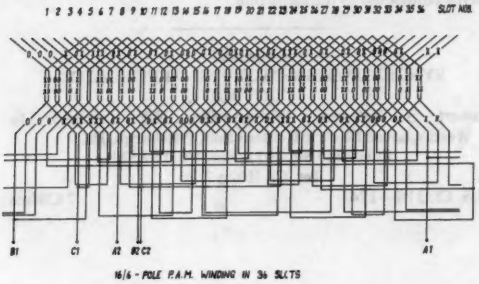
THREE-PHASE ALTERNATING CURRENT SELF-CASCADED ROTARY ELECTRIC MACHINE

Alexander Richard William Broadway; William Fong, and Gordon Hindle Rawcliffe, all of Bristol, England, assignors to National Research Development Corporation, London, England

Filed March 15, 1971, Ser. No. 124,265
Claims priority, application Great Britain, April 23, 1970, 19,548/70
Int. Cl. H02p 7/36
U.S. Cl. 318—199 **13 Claims**

The invention provides a three-phase self-cascaded machine with a single stator and rotor combination. Alternative forms of construction are described in that the stator may have two windings, one for each of two pole-numbers, or a single "pole-changing" winding of the pole-amplitude modulation type. The rotor may be of wound type with short-circuit coils or of reluctance type with flux-barrier peripheral members or of hybrid type combining the reluctance and wound

forms. All the rotor forms have similar electromagnetic characteristics in that when rotated in a magnetic field of the



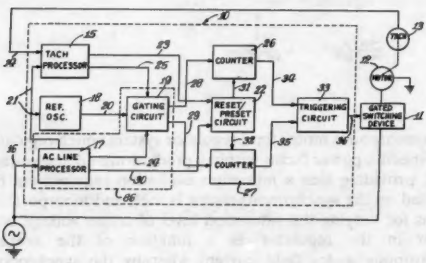
first stator pole-number, a field of the second stator pole-number is generated.

3,686,554

MOTOR SPEED CONTROL

Edward H. Getz, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed March 11, 1971, Ser. No. 123,241
Int. Cl. H02p *5/16*
U.S. Cl. 318—327 **16 Claims**



A digital control for regulating the speed of a moving device such as a motor. The control senses the speed of the motor and converts this information into a count. Upon the count reaching a preselected number, the control triggers a gated power control device controlling the electrical power supply to the motor so as to provide increased power to the motor when the instantaneous speed of the motor is below the desired speed and decreased power to the motor when the instantaneous speed of the motor is above the desired speed. By virtue of the digital circuitry of the control, the control may be formed as a simple integrated circuit control for effectively minimum cost.

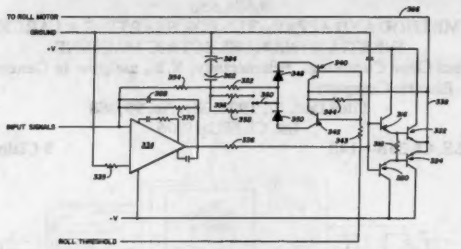
3,686,555

OPEN LOOP FLIGHT CONTROL SYSTEM

James R. Younkin, Mineral Wells, Tex., assignor to Mitchell Industries, Inc., Mineral Wells, Tex.

Continuation-in-part of Ser. No. 533,708, March 11, 1966, Pat. No. 3,555,391. This application Sept. 8, 1970, Ser. No. 70,304
Int. Cl. B64c *13/16*
U.S. Cl. 318—580 **8 Claims**

This disclosure is directed to a flight control system for an aircraft. A control sensor is responsive to movement of the aircraft about a preselected axis to produce a control signal. An amplifier channel includes a saturable amplifier unit which operates on the control signal and drives a servo motor unit. The servo motor unit actuates a control surface of the aircraft to cause movement of the aircraft about the preselected axis. The amplifier channel has a delaying feedback loop for adding a delayed representation of the amplifier channel output signal to the control signal to vary the transfer characteristic of the amplifier channel in order to produce a servo driving



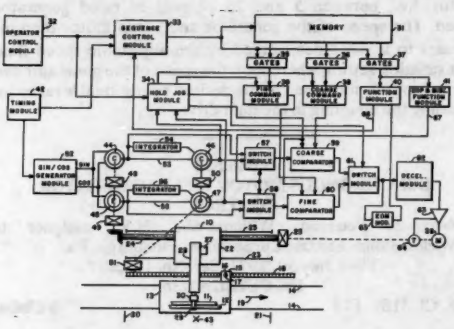
signal which matches the speed-versus-input characteristics of the servo motor unit. Displacement of the control surface is thus proportional to the control signal to eliminate the requirement of a follow-up element. A novel nonlinear circuit is also provided in the feedback loop to nonlinearly control the servo motor unit.

3,686,556

POSITIONING CONTROL SYSTEM FOR A MACHINE THAT PERFORMS WORK ON A MOVING PART

Ernest G. Anger, Wauwatosa; Giles J. Richards, Menomonee Falls; John F. Bloodgood, Fond Du Lac, and Roy J. Geiger, Cedarburg, all of Wis., assignors to Square D. Company, Park Ridge, Ill.

Filed May 24, 1971, Ser. No. 146,110
Int. Cl. G05b *11/18*
U.S. Cl. 318—595 **18 Claims**



A programmable and manually operable control system for controlling the position of a machine relative to a workpiece so the machine may perform work at various locations on the workpiece while the workpiece is moved by the conveyor. The system includes a pair of synchro resolvers which provide output signals indicative of the position of the machine relative to a datum position and a pair of synchro resolvers which provide output signals indicative of the position of the conveyor relative to the datum position. The outputs of the machine indicating resolvers provide the inputs to the conveyor indicating resolvers and the outputs of the conveyor indicating resolvers are compared with command signals that are generated by a continuously recycling counter which has been preset by signals from a memory so the displacement between selected locations on the workpiece and the machine is electrically measured without using differential mechanical gearing. The control system is arranged so the machine will move synchronously with the workpiece, independently of the work-

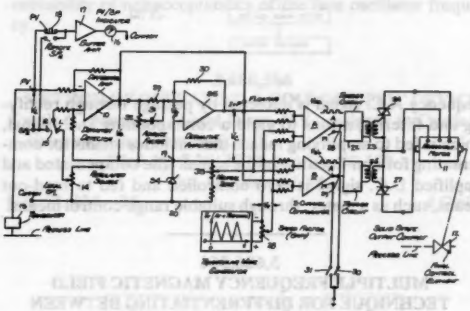
piece, and synchronously with the workpiece while the machine is moving from one preprogrammed location to a new preprogrammed location on the workpiece.

3,686,557

FLOATING-TYPE ELECTRONIC SERVO-MOTOR PROCESS CONTROLLER

John Futamura, Hatboro, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Aug. 26, 1970, Ser. No. 67,021
Int. Cl. G05b 11/28
U.S. Cl. 318—599 **8 Claims**



A floating-type electronic process controller including a differential amplifier which compares a voltage proportional to a process variable with a set point voltage to produce a deviation signal whose polarity and magnitude reflect the direction and extent of the departure of the process variable from the set point. The deviation signal is converted into on-off signals by applying it to a pair of comparator channels to which are also applied a triangular reference voltage having a constant frequency. When the deviation signal reflects a process variable which is below the set point, one channel is activated to yield square-wave pulses whose rate corresponds to the frequency of the reference voltage and whose pulse duration is proportional to the magnitude of the deviation signal, but when the deviation signal reflects a process variable which is above the set point, the other channel is activated to provide similar square-wave pulses. The square-wave pulses serve to trigger the triac control circuit of a reversible motor operatively coupled to a final control element, the pulses from one channel causing the motor to turn in one direction and the pulses from the other channel causing the motor to turn in the other direction, the duty cycle of the motor being determined by the duration of the pulses.

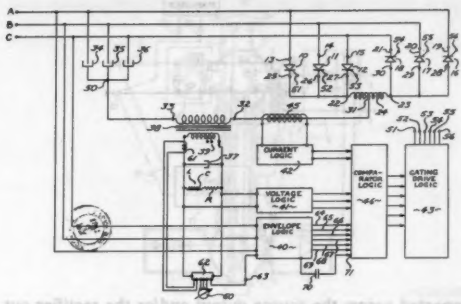
3,686,558

CONTROL FOR FREQUENCY CONVERTERS

George Havas, Youngstown, Ohio, and Shashi Bhushan Dewan, Toronto, Canada, assignors to Ajax Magnethermic Corporation, Warren, Ohio

Filed Jan. 4, 1971, Ser. No. 103,569
Int. Cl. H02m 5/30
U.S. Cl. 321—7 **24 Claims**

Control means for an AC/AC frequency converter for induction heating employing solid state switching devices of the type shown in application for U.S. Letters Patent Ser. No. 737,639 filed June 17, 1968, (U.S. Pat. No. 3,546,562, granted Dec. 8, 1970), which operates essentially at the resonant frequency of the tuned load circuit, comprising circuits individually sensing the high frequency output voltage and current, the low frequency input voltage and combining said individual signals to automatically adjust firing signals



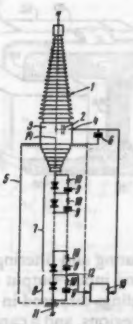
delivered to the solid state switching devices to minimize transients.

3,686,559

MONITOR OF SERIES-CONNECTED RECTIFIERS IN HIGH-VOLTAGE CONVERTER UNIT

Stanislav Leontievich Bezugly, ulitsa Dudykina, 70, kv. 64; Mikhail Andreevich Sidorsky, Dnepropetrovskoe Shosse, 58, kv. 59, and Vladimir Petrovich Kotlyar, ulitsa Silovaya, 19, kv., all of Zaporozhie, U.S.S.R.

Filed Aug. 10, 1971, Ser. No. 170,507
Int. Cl. H02m 7/00
U.S. Cl. 321—8 R **1 Claim**



A monitor or series-connected rectifiers incorporated in a high-voltage converter unit, according to the invention, is characterized in that high voltage is supplied to the rectifiers through a high-voltage capacitor bushing fitted with an instrument lead, and the indicator checking the state of the rectifiers is connected between said instrument lead and the terminal lead of an R-C circuit shorting out the main rectifier potentially coupled with the converter unit housing; another capacitor being inserted between said instrument lead and the converter unit housing.

3,686,560

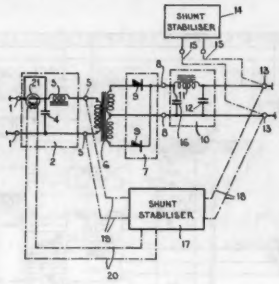
STABILIZED POWER SUPPLY SYSTEMS

Hans Heinz Lutterkort, London, England, assignor to International Computers Limited, London, England

Filed May 6, 1971, Ser. No. 140,915
Claims priority, application Great Britain, May 26, 1970, 25,232/70
Int. Cl. H02m 7/20
U.S. Cl. 321—18 **3 Claims**

A D.C. power supply employs shunt stabilization of the output of a full-wave rectifier for an A.C. source. The A.C. source

is a low-loss, high impedance type and a shunt stabilizer can be



connected across the source output and/or the rectifier output.

3,686,561

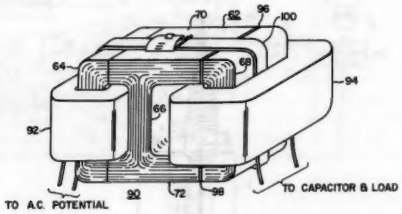
REGULATING AND FILTERING TRANSFORMER HAVING A MAGNETIC CORE CONSTRUCTED TO FACILITATE ADJUSTMENT OF NON-MAGNETIC GAPS THEREIN

Robert J. Spreadbury, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 23, 1971, Ser. No. 136,701The portion of the term of this patent subsequent to June 6, 1988, has been disclaimed.

Int. Cl. G05f *3/06*

U.S. Cl. 323—6 **17 Claims**



A parametric regulating and filtering transformer including a magnetic core having input, output and saturating regions, input and output windings disposed in inductive relation with the input and output regions, and a capacitor connected to the output winding to provide a tank circuit. Different embodiments of the parametric transformer develop a non-magnetic gap or gaps, in the output region of the magnetic core, required to provide the desired waveform and electrical performance of the transformer, while facilitating the manufacture and assembly of the transformer.

3,686,562

Patent Not Issued For This Number

3,686,563

APPARATUS UTILIZING AN AIR CORE TRANSFORMER FOR DETERMINING MAGNETIC MATERIAL CONTENT OF A SUBSTANCE

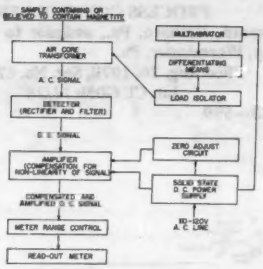
Kenneth E. Walter, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,051

Int. Cl. G01n *27/00*; G01r *33/00*

U.S. Cl. 324—13 **5 Claims**

An air-core transformer is adapted to receive a sample of the substance to be tested for content of magnetic material, e.g., the mineral magnetite. It is supplied, usually through load-isolating means, with constant voltage, high frequency, A.C. power from a square wave generator or the like, preferably a multi-vibrator receiving voltage-regulated D.C. power from a suitable power supply. The resulting high



frequency A.C. signal is detected by passage through rectifying and filtering means to yield a corresponding D.C. signal, which is fed to amplifying means that includes means for compensating for non-linearity of the signal. The compensated and amplified D.C. signal is zero controlled and fed to read-out means, such as a meter, through suitable range control means.

3,686,564

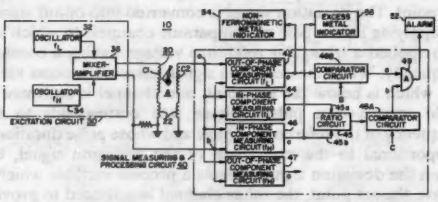
MULTIPLE FREQUENCY MAGNETIC FIELD TECHNIQUE FOR DIFFERENTIATING BETWEEN CLASSES OF METAL OBJECTS

George T. Mallick, Jr.; Walter J. Carr, Jr., and Robert C. Miller, all of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1970, Ser. No. 79,180

Int. Cl. G01r *33/00*

U.S. Cl. 324—41 **18 Claims**



The invention relates to an A.C. metal detection apparatus employing a means for subjecting metal objects to oscillating magnetic fields of more than one frequency, and measuring circuits for detecting at each frequency the magnetic field due to the presence of the object and analyzing the magnetic fields to classify the objects on the basis of parameters such as size, shape, thickness, and surface to volume ratio.

3,686,565

FREQUENCY DETECTOR

Lester S. Kelem, Parsippany, and Stephen E. Reade, Nutley, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

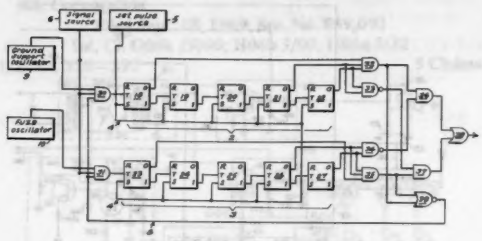
Filed Dec. 1, 1970, Ser. No. 94,127

Int. Cl. G01r *23/14, 23/02*

U.S. Cl. 324—79 D **5 Claims**

An electronic apparatus for detecting gross shifts in the frequency of electronic oscillators employed in time-fuse weapon systems consisting of two parallel accumulator channels, each consisting of a series of connected flip-flops. One of the channels accumulates pulses from an accurate oscillator and the other from the fuse oscillator. The outputs of the

channels are each connected to gate means which function in response to the outputs to provide an indication of the acceptability of nonacceptability of the fuse oscillator frequency.

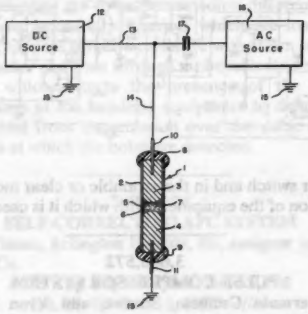


3,686,566

METHOD OF OPERATING A COULOMETRIC DEVICE

Curtis C. Beusman, Mount Kisco, N.Y., assignor to Curtis Instruments, Inc., New York, N.Y.

Filed April 20, 1970, Ser. No. 30,159
Int. Cl. G01r *11/44*
U.S. Cl. 324—94 4 Claims



A method for operating small coulometric devices having liquid metal electrodes is disclosed. The maximum operating current which such devices are capable of absorbing may be increased ten fold and more by superposing on the conventional direct operating current an alternating pacifying current.

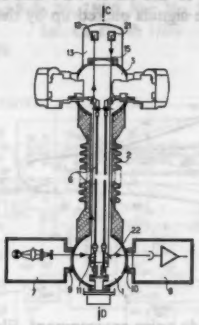
3,686,567

CIRCUIT BREAKER HAVING CURRENT TRANSFORMER WITH INCORPORATED OPTICAL LINK

Lucien Orgeret, 72 Boulevard Pinel, 69-Lyon 3e, France

Filed June 15, 1970, Ser. No. 46,362
Claims priority, application France, June 13, 1969, 6919726
Int. Cl. G02f *1/18, 1/26;* G01r *31/00*
U.S. Cl. 324—96 2 Claims

A circuit breaker comprising a hollow insulating column, and an insulated cut-off chamber supported by the column and having movable and fixed contact members therein that are connected to terminals. An optical link current transformer is also provided and comprises a polarized light beam transmitter arranged at the bottom of the column which transmits a beam to the interior of the column, an optical Faraday element, and a toroidal winding directly securing one of the terminals connected to the contact members. The Faraday element is connected to the toroidal winding so as to be subjected to magnetic fields generated by current in the winding. Reflecting mirrors are provided in the column and in the cut-off chamber for transmitting light beams from the transmitter through the column and cut-off chamber and to the Faraday element. Additional reflecting mirrors are provided to transmit light beams from the Faraday element back through the cut-off chamber, the column and then to a photoelectric cell arranged at the base of the column.

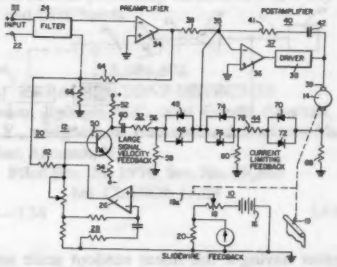


3,686,568

NULL-BALANCE SERVO SYSTEM

Samuel J. MacMullan, Newtown, and Albert J. Williams, Jr., Ambler, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed March 19, 1970, Ser. No. 20,885
Int. Cl. G01r *17/06, 13/04*
U.S. Cl. 324—99 R 12 Claims



A high speed null-balance servo measuring system having a D.C. motor with a prescribed current limit which is operated to drive an adjustable balancing circuit element with maximum speed and without overshoot. A small velocity feedback circuit provides damping when the velocity is small, and a large velocity feedback circuit provides damping when the velocity is sufficiently large to exceed a threshold level. A current limiting circuit constrains the current through the motor within the prescribed limit. In some embodiments, the current limiting circuit is a feedback circuit.

3,686,569

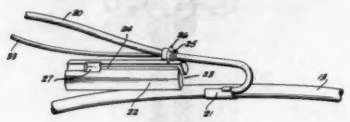
CAPACITIVE PICK-UP MEANS FOR AN ELECTRICAL TACHOMETER

Tage S. Neilsen, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.

Filed May 1, 1970, Ser. No. 33,827
Int. Cl. G01r *1/20;* G01p *3/48*
U.S. Cl. 324—126 4 Claims

Herein described is an electrical tachometer which is responsive to electrical signals applied to selected spark plug wire of an automobile. The contact comprises a capacitive

coupling contact which is wrapped around the exterior insulation of the spark plug wire. A clamp-on arrangement of the capacitive coupling contact includes a pair of contactor clips which are secured to the outer wire and held by an outer shield to shield, the signals picked up by the capacitive connections from outside noise environment. Electronic circuitry is responsive to the signals received by the capacity contactors and includes a signal shaping network to provide the necessary signal-to-noise discrimination. The relatively noise-free signal is then converted to a D.C. signal which is then applied to a meter.

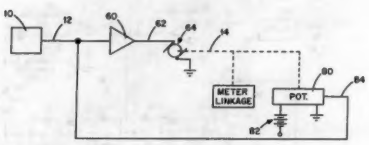


3,686,570

LINEAR MOTION METER DEVICE

Jack A. Cooper, Grand Rapids, Mich., assignor to Lear Siegler, Inc.

Filed Jan. 23, 1970, Ser. No. 5,182
Int. Cl. G01r *15/10, 17/06*
U.S. Cl. 324—132 **4 Claims**



A meter having a flat linear readout scale and utilizing a rotating input shaft, the shaft being driven by a torque motor and connecting to a two-arm linkage which converts the rotation into straight-line motion. The longer of the two arms in this linkage is divided into two segments, and it is found that for maximum linearity output the relative lengths of the arms should be, for the first arm, the first segment of the second arm, and the second segment of the second arm, in the ratio of about 1.31:1.58:2.06, respectively. Because there is still a small amount of nonlinearity involved in such a linkage where even this ratio is used, a shaped follow-up potentiometer is connected to the drive shaft of the motor so as to develop a correcting signal in accordance with the angular position of the shaft, which signal is fed back to the motor.

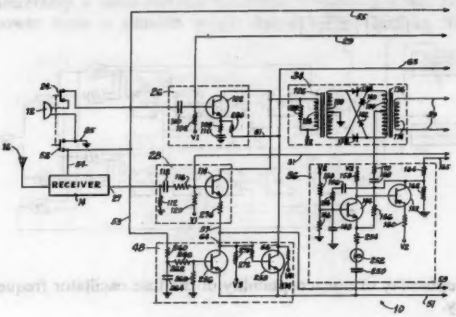
3,686,571

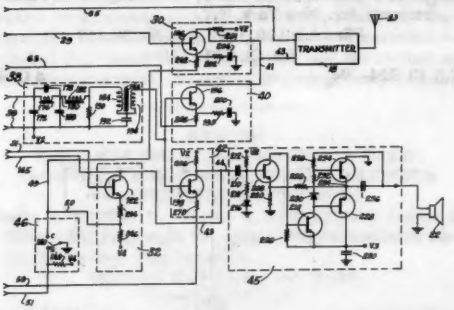
SPEECH SCRAMBLER

George H. Fathauer, Decatur, Ill., assignor to Zaring Industries, Inc., Carmel, Ind.

Filed Aug. 1, 1969, Ser. No. 846,831
Int. Cl. H04k *1/00*
U.S. Cl. 325—32 **10 Claims**

A speech scrambler for use with conventional mobile communications systems is described including signal gating circuitry so that it may be operated by a simple push button





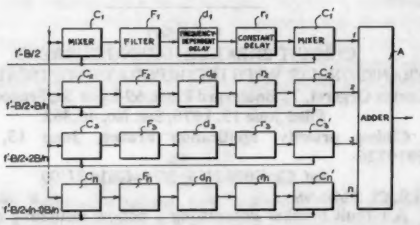
transmitter switch and in the scramble or clear modes without modification of the equipment with which it is used.

3,686,572

PULSE-COMPRESSOR SYSTEM

Robert Germain Guilhem, Sceaux, and Yvon Pierre Jean Fouche, Chatou, both of France, assignors to Compagnie Francaise Thomson-Houston

Filed Oct. 30, 1962, Ser. No. 235,178
Int. Cl. H04b *1/16*
U.S. Cl. 325—321 **6 Claims**



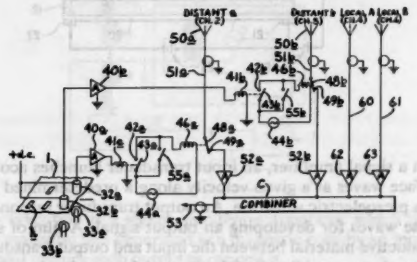
A system for compressing a frequency-modulated pulse signal includes means for separating the signal into a plurality of frequency component signals, a plurality of dispersive media through which the respective signals are passed for compression in a predetermined compression ratio, and means for recombining the compressed component signals into a common output pulse which is a compressed replica of the input pulse.

3,686,573

NON-DUPLICATION SWITCHING ARRANGEMENT FOR CABLE TELEVISION TRANSMISSION

David S. McVoy, Gainesville, Fla., assignor to Coaxial Scientific Corporation

Filed Sept. 18, 1969, Ser. No. 859,091
Int. Cl. G06k 19/00; H04b 3/00; H04n 5/22
U.S. Cl. 325—395 5 Claims



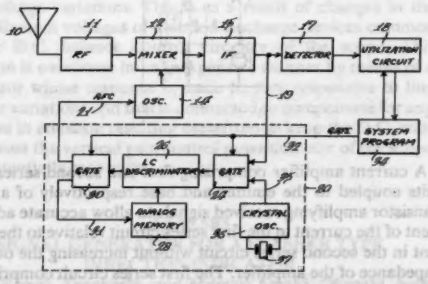
A non-duplication switching arrangement for a cable television system comprises cards that are provided with computer-formed punch holes to correspond to the time periods when the same programs are to be presented on different channels. The cards are mounted in carriers which are loaded into a holder. The carriers with the cards are withdrawn successively from the holder and pass through a photoelectric readout arrangement which detects the presence of the holes and operates relays at the headend equipment to delete the particular channel from transmission over the cable during the time periods at which the holes are detected.

3,686,574

SELF-CORRECTING AFC SYSTEM

George J. Niman, Arlington Heights, Ill., assignor to The Hallicrafters Co.

Filed Aug. 19, 1970, Ser. No. 65,198
Int. Cl. H04b 1/16; H03b 3/04
U.S. Cl. 325—421 11 Claims



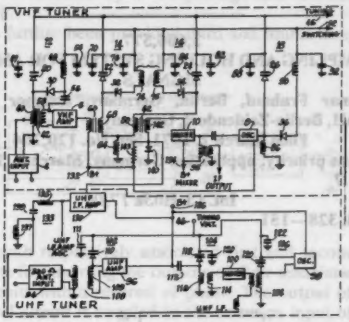
An AFC system includes a tunable LC discriminator having varactor controlled by a voltage from an analog memory. During a frequency error correction period, the output of a crystal oscillator is gated to the LC discriminator, and any discriminator voltage output, representing a frequency error in the discriminator, is gated to the analog memory to correct the tuning of the discriminator.

3,686,575

VHF-UHF VARACTOR TUNER CONTROL CIRCUIT

Richard Travers Chamberlain, Arlington Heights, Ill., assignor to Admiral Corporation, Chicago, Ill.

Filed Feb. 26, 1970, Ser. No. 14,514
Int. Cl. H04b 1/06
U.S. Cl. 325—459 4 Claims



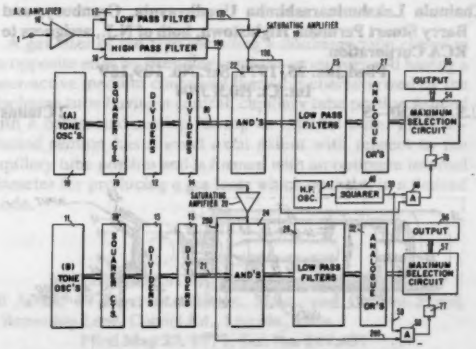
A television tuner control circuit which provides equal presentation of all channels on the VHF and UHF bands is disclosed. The tuner used in combination with the circuit of this invention is capable of receiving both VHF and UHF channels, and includes a plurality of tuned resonant circuits including voltage controlled impedance and switching elements. The control circuit includes a sequential switch for selecting between VHF and UHF bands of broadcast channels and a variable voltage supply device for controlling the impedance and switching elements and thus selecting the channel of interest within the chosen band of frequencies. Utilizing the control circuit of this invention, a single control on the television receiver's control panel may be used to select any station on the VHF and UHF bands.

3,686,576

PARALLEL TONE DETECTOR

Paul Abramson, Raleigh, N.C., and Gerald Goertzel, White Plains, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1970, Ser. No. 99,383
Int. Cl. H03b 13/04
U.S. Cl. 328—134 14 Claims



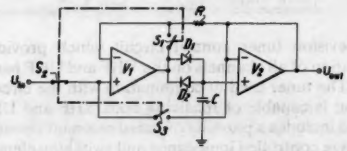
A parallel tone detection method, system and apparatus includes using several generators for providing square waves at the fundamental frequency of several parallel tones to be detected. An unknown input signal is clipped and then AND gates are used to test for the simultaneous presence of the A.C. polarities of both the unknown input signal and each

respective square wave. A low-pass filter is connected to each of the outputs of the AND gates associated with each tone. The outputs of the filters for each tone are connected into a corresponding analogue OR gate, which is one of a series of analogue OR gates. Then it is determined whether the outputs of any of the analogue OR gates exceeds a standard value. If it does then a circuit determines which analogue OR gate produces the largest output to identify the tone received.

3,686,577
SAMPLING AND HOLDING SYSTEM FOR ANALOG SIGNALS

Waldemar Fruhauf, Berlin, Germany, assignor to Krone GmbH, Berlin-Zehlendorf, Germany

Filed March 2, 1971, Ser. No. 120,204
Claims priority, application Germany, March 4, 1970, P 20 10 171.7
Int. Cl. H03k 17/00
U.S. Cl. 328—151 **6 Claims**

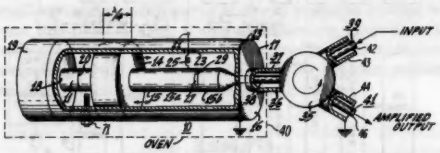


A first operational amplifier, lying in the charging circuit of a storage capacitor in series with a pair of antiparallel diodes, is connected in tandem with a second operational amplifier of unity amplification factor in the reading circuit of the capacitor. In the sampling mode, an input signal is applied to the first amplifier whose feedback path then includes the second amplifier; in the holding mode the input signal is cut off and the first amplifier is connected in a control path of the second amplifier so that the output voltage of the first amplifier becomes nearly equal to the capacitor voltage. At this point the diodes separate the capacitor from the output of the first amplifier to maintain the capacitor charge, with simultaneous closure of an ancillary feedback circuit for the first amplifier to equalize the potential on opposite sides of the diodes.

3,686,578
STABILIZED TRANSFERRED ELECTRON AMPLIFIER

Chainulu Lakshminarashimha Upadhyayula, Cranbury, and Barry Stuart Perlman, Hightstown, both of N.J., assignors to RCA Corporation

Filed Jan. 25, 1971, Ser. No. 109,159
Int. Cl. H03f 3/04
U.S. Cl. 330—5 **2 Claims**

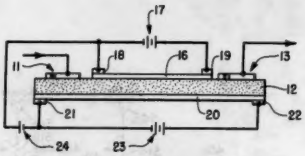


A supercritically doped pulsed transferred electron device is described in which means are provided for thermally inducing stability in addition to circuit loading to achieve wideband linear amplification.

3,686,579
SOLID-STATE, ACOUSTIC-WAVE AMPLIFIERS

Peter G. Everett, Oak Park, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 21, 1971, Ser. No. 154,967
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 **7 Claims**

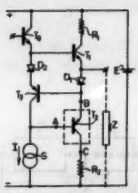


In a signal amplifier, an input transducer launches acoustic surface waves at a given velocity along a predetermined path on a piezoelectric substrate. An output transducer responds to those waves for developing an output signal. A film of semiconductive material between the input and output transducers responds to a unidirectional potential for conducting charge carriers alongside the propagation path at a velocity slightly greater than the acoustic wave velocity to achieve a amplification of the acoustic surface waves. Finally, a unidirectional field is applied transversely through the semi-conductive film to control the density of the charge carriers and the amplification.

3,686,580
CURRENT AMPLIFIER

Rudy Johan Van Den Plassche, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Sept. 17, 1970, Ser. No. 72,918
Claims priority, application Netherlands, Sept. 26, 1969, 6914695
Int. Cl. H03f 3/42
U.S. Cl. 330—18 **4 Claims**



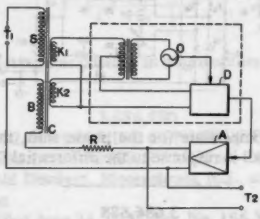
A current amplifier comprising first and second series circuits coupled to the emitter and base respectively of a first transistor amplifying received signals to allow accurate adjustment of the current in the first series circuit relative to the current in the second series circuit without increasing the output impedance of the amplifier. The first series circuit comprises a first diode and a second transistor coupling the emitter of the first transistor to the power supply. The second series circuit comprises a second diode, a third transistor, and a current determining means coupling the base of the first transistor to the power supply. The first and second series circuits cooperate to respond to differences in the current between the current in the second series circuit and the current in the first series circuit thereby maintaining predetermined relationships between these currents.

3,686,581

ELECTRIC SIGNAL AMPLIFYING APPARATUS

Ikuo Takeda, 2-24 Sekimachi; Takashi Suzuki, c/o Takeda Riken Industry Co. Ltd., 1-chome, Asachicha, and Hikaru Furukawa, 2296, Oholzumigakuen-machi, all of Nerima-ku, Tokyo, Japan

Filed March 31, 1970, Ser. No. 24,210
Claims priority, application Japan, April 1, 1969, 44/24391
Int. Cl. H03f 9/00
U.S. Cl. 330—63 1 Claim



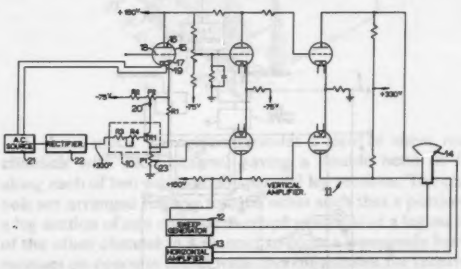
This invention is a signal amplifying apparatus which detects a magnetic flux generated in a magnetic core by an input signal and obtains such output as cancels it.

3,686,582

A.C. BALANCE CONTROL NETWORKS

Allan A. Kleeger, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Aug. 16, 1971, Ser. No. 172,139
Int. Cl. H03g 3/22
U.S. Cl. 330—142 10 Claims



Many prior art oscilloscopes suffer from the disadvantage that the time base thereof shifts up and down in response to line voltage variations. This is as a result of changes in the A.C. filament voltages of electron discharge devices common to the D.C. balance control circuitry of the scope. This problem is overcome in an inexpensive manner by means of a transistor whose response is made to vary responsive to line voltage variations and that is connected to compensate for any changes in emission resulting therefrom to keep the D.C. voltage across the vertical gain control potentiometer of the scope at substantially zero volts.

3,686,583

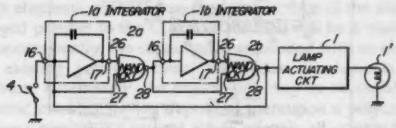
SIGNAL GENERATOR FOR A FLASHER TYPE DIRECTION INDICATOR

Hisasi Kawai, Toyohashi, and Masami Amaki, Okazaki, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Jan. 5, 1971, Ser. No. 104,051
Claims priority, application Japan, Feb. 13, 1970, 45/12945; Feb. 13, 1970, 45/12946
Int. Cl. B60q 1/34; H03k 3/28; H05b 41/34
U.S. Cl. 331—57 8 Claims

There has been provided a signal generator for a flasher type direction indicator including first and second integrator circuits, each associated with first and second logical circuits. Inputs and outputs of each of the respective circuits are coupled to their associated logical circuits so that each produces an output when the input and output of each of their associated integrating circuits are both activated. Further the output of each logical circuit is coupled to the common inputs of the other integrating and logical circuits so that the indicator is flashed on and off by the output signals of the second logical circuit.

There has further been provided third and fourth integrating circuits with respectively associated first and second inverter circuits for inverting the outputs of their associated integrated circuits with a reversal of phase. The output of the second logical circuit is coupled to the common input of the first integrator and associated logical circuit at the input of the third integrator, while the output of the first inverter is coupled to the input of the fourth integrator so that three indicators are flashed on and off at different recurrent rates in accordance with the output of the second logical circuit and the first and second inverter circuits.

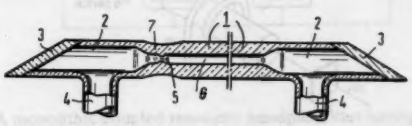


3,686,584

GAS LASER HAVING A CAPILLARY TUBE WITH A CONTRACTED PORTION THAT SERVES AS A MODE SELECTOR

Hermann Wahl, Krailling, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 2, 1970, Ser. No. 94,415
Claims priority, application Germany, Dec. 11, 1969, P 19 62 201.6
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 5 Claims



A gas laser of the type including a discharge tube closed at its opposite ends by Brewster windows or mirrors and having a laser-active medium contained therein is characterized by the discharge tube having a central, capillary tube portion formed with a contracted section having an internal bore. The contracted section has a small axial extent with respect to the capillary tube portion and is formed with an optimum internal diameter for producing a gas laser which operates in a desired mode.

3,686,585

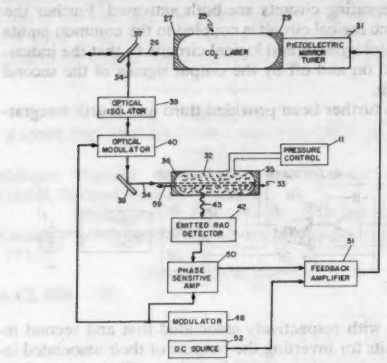
METHOD OF STABILIZING A GAS LASER

Ali Javan, 69 River St., Boston, Mass., and Charles Freed, Browning Lane, Conart Rd., Lincoln, Mass.

Filed May 27, 1971, Ser. No. 147,457
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 10 Claims

The output radiation of a gas laser is directed into a cell containing a gas with a resonant absorption line. The gas is subjected to a standing wave field of the laser radiation. A saturation resonance is detected in the emitted spontaneous radiation from an energy state collisionally coupled to an in-

teracting energy level of the absorption transition when the laser is tuned near the center frequency of its Doppler broadened line profile. This resonance is utilized as a reference in a feedback system to frequency lock the laser to a heretofore unknown degree of stability.



3,686,586

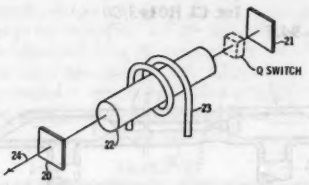
OXYAPATITE LASERS

George W. Roland; Richard H. Hopkins, both of Monroeville, and Nathan T. Melamed, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 859,753, Sept. 22, 1969. This application June 21, 1971, Ser. No. 155,074

Int. Cl. H01s *3/16*

U.S. Cl. 331—94.5 16 Claims



A composition of matter which can be used as a laser crystal in a laser generator and which can be doped with sensitizer ions has the empirical chemical formula $RM_{4-x}(ZO_4)_3O:A_x$, where A represents a lasing ion selected from Nd, Er, and Ho, x has a value from 0.001 to 1, M is an ion selected from La, Gd, Y and mixtures thereof, Z is an ion selected from Si and Ge and R is an ion selected from Sr, Ba, and Mg.

3,686,587

VOLTAGE CONTROLLED OSCILLATOR HAVING TWO PHASE-SHIFTING FEEDBACK PATHS

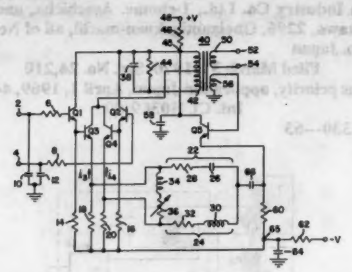
Bert H. Dann, Santa Clara, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Division of Ser. No. 842,497, July 17, 1969, abandoned. This application May 19, 1971, Ser. No. 141,659

Int. Cl. H03b *3/04, 5/12*

U.S. Cl. 331—117 R 9 Claims

A voltage controlled oscillator having a pair of active elements operating differentially with respect to DC inputs and differentially as amplifiers with respect to RF feedback currents. Separate feedback paths having ±45° phase shift are associated with each active element so that the sum of the phase shifts depends on the differential DC inputs to the active elements. A tuned circuit in the common feedback loop changes frequency to compensate for the phase shift, thus providing frequency control in response to the differential DC inputs.



3,686,588

IMPROVEMENTS RELATING TO THE OUTPUT POWER DERIVED FROM PHASE MODULATING

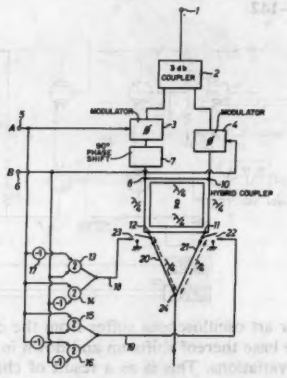
Brian Jackson, and John Eric Barrett, both of Wells, England, assignors to EMI Limited, Hayes, England

Filed Oct. 29, 1970, Ser. No. 85,175

Claims priority, application Great Britain, Nov. 19, 1969, 56,533/69

Int. Cl. H03c *3/12*

U.S. Cl. 332—9 R 3 Claims



A phase modulator according to the invention includes means for producing quadrature components of a carrier wave each phase reversal modulated by respective digital pulse signals, means for applying the components to respective adjacent terminals of a four terminal hybrid coupler, and means responsive to the digital pulse signals for selecting the appropriate one of the other terminals of the coupler to derive an output therefrom equivalent to the resultant of the quadrature components of the carrier wave.

3,686,589

WAVEGUIDE TRANSITION

Georg Spinner, ErzgieBereistr. 33, and Leo Treczka, Karl-Post-Str. 2, both of Munich 45, Germany

Filed Sept. 15, 1970, Ser. No. 72,424

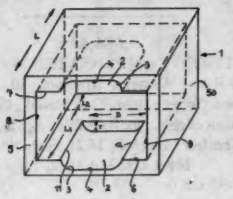
Claims priority, application Germany, Sept. 23, 1969, P 19 48 157.3

Int. Cl. H01p *5/08, 3/12*

U.S. Cl. 333—21 R 10 Claims

The specification describes a transition transformation part for leading from a preferebly oval smooth or corrugated

waveguide to a rectangular cross-section. For producing a transformation stage recesses are formed in opposite broad



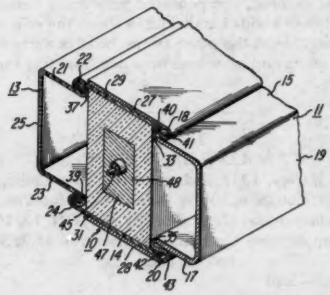
sides of the rectangular passage in the structure.

3,686,590

SHEET METAL WAVEGUIDE CONSTRUCTED OF A PAIR OF INTERLOCKING SHEET METAL CHANNELS

William Arnold Dischert, Moorestown, N.J., assignor to RCA Corporation

Filed June 24, 1971, Ser. No. 156,397
Int. Cl. H01p 1/32, 3/12
U.S. Cl. 333—24.1 4 Claims



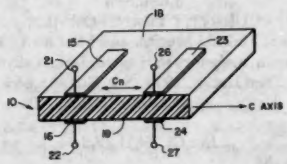
A sheet metal waveguide includes a pair of sheet metal channels with each channel having a double bend or fold along each of two substantially parallel leg sections. The channels are arranged relative to each other such that a portion of a leg suction of one channel overlaps a portion of a leg section of the other channel in a manner to form a waveguide having recesses on opposite broad walls thereof suitable for receiving and holding a dielectric body therebetween. The ends of the leg sections of one channel are clipped and thereby held within a bend or fold in the leg sections of the other channel.

3,686,591

ANISOTROPIC CRYSTAL CIRCUIT

Emanuel Gikow, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed July 24, 1970, Ser. No. 58,019
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—70 6 Claims



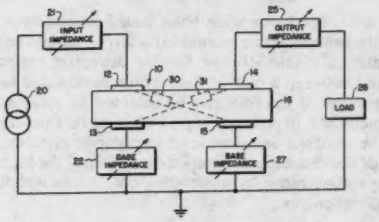
A capacitive arrangement which, in some instances, can be used in combination with one or more resistive elements or other circuit elements to form a distributed circuit, wherein a slab of anisotropic single crystal, such as barium titanate, is used as a substrate upon whose major surfaces the circuit electrodes or elements are mounted. When electrodes are disposed on opposite surfaces of the slab between which an electric field exists and if the crystal slab is mounted so that the C axis is perpendicular to this electric field, the dielectric constant of the crystal slab is a maximum and the capacitance of the capacitor formed by said electrodes and the portion of the crystal slab (dielectric substrate) disposed therebetween is a maximum. On the other hand, the dielectric constant of the portion of the crystal slab disposed between the electrodes, or circuit elements, mounted on the same surface of the slab and arranged parallel to the C axis of the slab will be a minimum and, consequently, the capacitance associated with an electric field existing between these electrodes or elements is a minimum. Alternately, the crystal slab may be replaced by a dielectric member having deposited thereupon a polycrystalline layer comprising several single crystals all oriented with their C axes in the same direction and in the direction of the C axis described above for the single crystal slab.

3,686,592

MONOLITHIC COUPLED CRYSTAL RESONATOR FILTER HAVING CROSS IMPEDANCE ADJUSTING MEANS

Frank K. Priebe, Fair Haven, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 8, 1970, Ser. No. 79,105
Int. Cl. H03h 7/02, 9/18
U.S. Cl. 333—71 4 Claims



A monolithic coupled resonator bandpass filter having pairs of input and output electrodes mounted on a crystal resonator such as quartz. A generator is coupled to the high potential side of the input electrodes via an adjustable input impedance. The high potential side of the output electrodes is coupled to a load via an adjustable output impedance. The low potential sides of the input and output electrodes are coupled to ground via adjustable base impedances. The frequency transfer response of the filter may be adjusted by proper adjustment of the various adjustable impedances. Proper adjustment of the base impedances can adjust the symmetry and ripple of the transfer response curve.

3,686,593

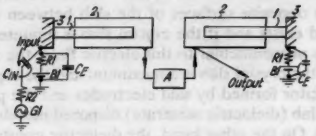
ELECTROMECHANICAL RESONATOR

Hisham Mohamed Saadallah Zakaria, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,409
Claims priority, application Great Britain, March 7, 1969, 12,218/69
Int. Cl. H03h 7/10, 9/00
U.S. Cl. 333—71 24 Claims

An electromechanical resonator is provided incorporating a vibrating reed driven by electrostatic forces between itself and

an output electrode. The output is represented by capacitance changes between the reed and an output electrode. Multiple



resonators may be used to form band-pass filters and the like.

3,686,594

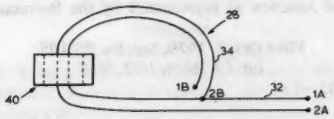
LOW IMPEDANCE WIDEBAND STRIP TRANSMISSION LINE TRANSFORMER

Larry Hoppis, Canoga Park, and Richard L. Willett, Woodland Hills, both of Calif., assignors to The Bunker-Ramo Corporation, Canoga Park, Calif.

Continuation of Ser. No. 677,690, Oct. 24, 1967, abandoned. This application Oct. 16, 1970, Ser. No. 81,614

Int. Cl. H01p *3/08, 5/08*

U.S. Cl. 333—84 M **6 Claims**



A low impedance wide band transformer comprised of a strip transmission line wound on a ferrite core. The strip line consists of a thin strip of flexible dielectric material sandwiched between a pair of flat flexible conductive layers. The dimensions of the line can be selected to yield a very low characteristic impedance, e.g., 1 ohm, so that the transformer can be used for very low level impedance matching. Reduction of the characteristic impedance extends the high frequency operating range by minimizing core losses which occur at high frequencies.

3,686,595

WAVEGUIDE TRANSITION MEMBER

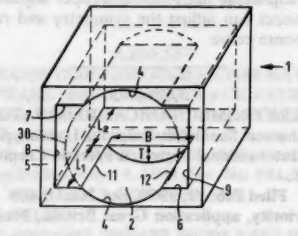
Georg Spinner, Erzgiebereistr. 33, Munich 2, Germany

Filed Sept. 15, 1970, Ser. No. 72,287

Claims priority, application Germany, Sept. 23, 1969, P 19 48 156.2; April 9, 1970, P 20 17 042.7

Int. Cl. H01p *5/08*

U.S. Cl. 333—98 R **12 Claims**



The specification describes a transition transformation part for leading from a preferably oval smooth or corrugated waveguide to a rectangular cross-section. For producing a transformation stage recesses are formed in opposite broad sides of the rectangular passage in the structure.

3,686,596

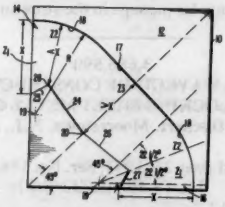
DOUBLE MITERED COMPENSATED WAVEGUIDE BEND

Thomas K. Albee, Western Springs, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 819,294, April 25, 1969. This application March 8, 1971, Ser. No. 122,104

Int. Cl. H01p *1/02, 5/00*

U.S. Cl. 333—98 BE **27 Claims**



A double mitered, compensated waveguide bend having a low VSWR over a wide bandwidth in which the effective width of the waveguide in the plane of the bend is narrowed at the mitered corners and increased on a line bisecting the angle of the bend.

3,686,597

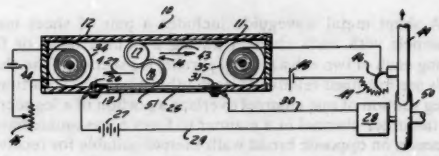
ROLLER-BAND DEVICES

Wayne E. Harley, 1315 Richmond Dr., Eau Gallie, Fla., and Ronald D. Coughlin, 100 W. Alma Dr., Melbourne, Fla.

Continuation-in-part of Ser. No. 767,107, Oct. 14, 1968. This application April 23, 1970, Ser. No. 31,303

Int. Cl. H01f *7/00*

U.S. Cl. 335—230 **20 Claims**



A roller-band device has a stationary magnetic component and a roller-band cluster with a magnetic component polarized for repulsion by the stationary component. One of the magnetic components may be a permanent magnet while the other is an electromagnetic component. Embodiments show a pair of stationary electromagnets operated to exert counterbiasing forces on a cluster and also a roller element having a coil energized by current supplied through rolling contact with spaced band elements.

3,686,598

CURRENT TRANSFORMER

Minoru Ozawa; Tadashi Morito, and Masahiro Ishigami, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1971, Ser. No. 205,865

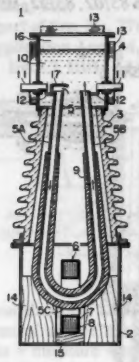
Claims priority, application Japan, Dec. 14, 1970, 45/112091

Int. Cl. H01f *27/10*

U.S. Cl. 336—58 **12 Claims**

In a current transformer of the erect type wherein the primary conductor provided with a predetermined main insulator is extended from one of the primary terminals disposed in the upper oil tank, is passed through the interior of a porcelain

tube, is interlinked with the secondary side of the current transformer as is arranged in the lower oil tank, and is returned to the other primary terminal disposed in the upper oil tank, and wherein an insulating liquid is filled in the current transformer, a current transformer wherein the primary conductor is hollow and is formed of two unit hollow conductors substantially different in the amount of generated heat per unit length, and wherein the insulating liquid is circulated in the hollow primary conductor.



3,686,599

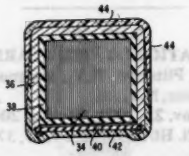
MAGNETIC CORE WITH ELECTRICAL INSULATION

John T. Lee, Valencia, Pa., assignor to Magnetics, Inc.

Division of Ser. No. 618,432, Feb. 24, 1967, Pat. No. 3,523,040. This application April 8, 1970, Ser. No. 32,493

Int. Cl. H01f *27/02, 27/24*

U.S. Cl. 336—96 **12 Claims**



An electrical insulating material combining resin and a solid particulate filler to obtain thixotropic properties providing more uniform coating coverage in particular at product corner surfaces. In a specific embodiment, the material provides a resilient, matte-finish for non-slip application of coil windings. The electrical insulation material is prepared with a volatile liquid vehicle for spray-on application. In a method for sealing and insulating magnetic cores, the cores are heated above about 225° F. but not above about 425° F. to expand gases within the cores and/or within core encasements and permit gas escape before sealing. Sealing is completed while the magnetic core, and encasement if any, are at an elevated temperature. Curing of the coating is carried out by heating.

3,686,600

POTENTIAL TRANSFORMER

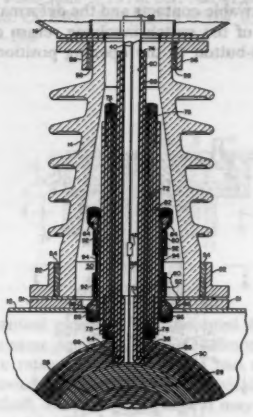
Edmond E. Conner, Brookfield, Ohio, and Edward C. Wentz, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1971, Ser. No. 117,253

Int. Cl. H01f *15/04*

U.S. Cl. 336—70 **10 Claims**

An apparatus used in measuring the potential of an external source utilizing inductively coupled high and low voltage windings. The high voltage winding is connected to the source being measured through an electrical bushing assembly. The bushing assembly comprises stress grading shields which are terminated by stress rings.



3,686,601

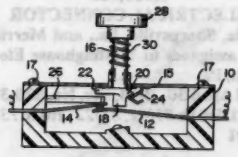
CIRCUIT BREAKER SWITCH

Bernard Kaczmarek, Chicago, Ill., and Vern Lander, Sarasota, Fla., assignors to Workman Electronic Products, Incorporated, Sarasota, Fla.

Filed July 6, 1970, Ser. No. 52,591

Int. Cl. H01h *3/12, 13/50, 73/30*

U.S. Cl. 337—66 **7 Claims**



A push-pull snap action electrical switch including a longitudinally reciprocal shaft arranged to move at least two contact elements into and out of engagement with one another. The contact elements are inherently resilient leaf spring, at least one of which is biased into operative position by means of a thermal responsive element. The thermal responsive element is deflectable out of biasing position due to excess current flowing through it to allow disengagement of the contacts. Snap action is provided by spring means which may be movably mounted within a casing which is threadably or frictionally secured to the switch housing.

3,686,602

MINIATURIZED CIRCUIT-BREAKER SWITCH

Jean Jullien-Davin, Valence, France, assignor to Crouzet, Paris, France

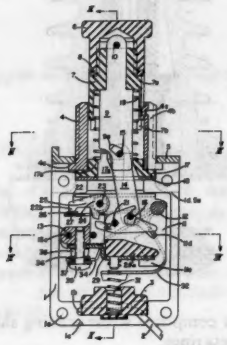
Filed Nov. 13, 1970, Ser. No. 89,375

Int. Cl. H01h *71/16*

U.S. Cl. 337—66 **3 Claims**

A single-pole circuit-breaker switch for manual operation and free tripping comprising an insulating casing containing two stationary contacts and having a hand-operated closure push-button slidably fitted within the said casing and projecting therefrom, the said switch comprising means for retaining the said push-button in the depressed position, a frame which is movable within the casing and carries on the one hand two

movable contacts which are capable of cooperating with the stationary contacts and are connected to each other by means of a U-shaped thermostatic element which has two arms connected to the movable contacts and the deformation of which causes tripping of the switch involving return of the sliding frame and push-button to the opening position and on the



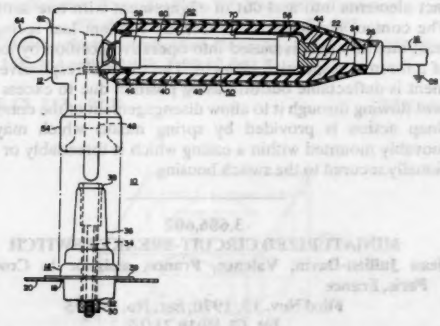
other hand locking means and means for releasing the movable frame under the action of the thermostatic element, connecting means pivotally attached to the push-button and to the movable frame and elastic restoring means for returning the movable portions to the opening position at the time of operation of the releasing means.

3,686,603

ELECTRICAL CONNECTOR

Arthur M. Lockie, Sharpsville, Pa., and Merrill G. Leonard, Fowler, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 30, 1969, Ser. No. 820,370
Int. Cl. H01h *85/02, 85/22;* **H01r** *13/46*
U.S. Cl. 337—201 **6 Claims**



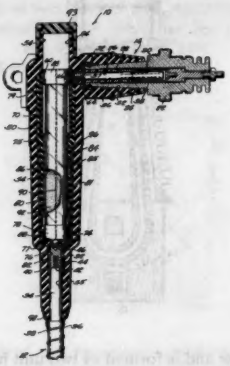
A fusible plug-in type electrical connector for interconnecting a shielded electrical conductor with a load circuit. The removable plug-in portion of the connector includes means for reducing the electrical stress adjacent the electrodes of the fuse, one of which is still at line potential after the fuse has interrupted the circuit.

3,686,604

CURRENT INTERRUPTING SAFE BREAK TERMINATOR

Edwin A. Link, Waukesha, and Edward L. Sankey, New Berlin, both of Wis., assignors to RTE Corporation, Waukesha, Wis.

Filed Aug. 12, 1969, Ser. No. 849,334
Int. Cl. H01h *85/02, 85/22;* **H01r** *13/46*
U.S. Cl. 337—201 **7 Claims**



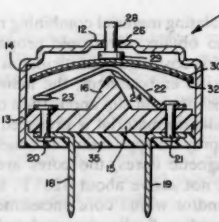
A current interrupting connector for connecting a high voltage shielded cable to underground distribution apparatus, the connector including a housing formed of resilient insulating material and having a connection recess for an electrically conductive element and a cable termination passage sealed at both ends for housing a removable non-expulsive or non-gas forming interrupter. Electrical connectors are provided in the passage for connecting the interrupter to the electrically conductive element and to the high voltage cable. Each of the connectors is molded into electrically conductive sleeves which also surround and electrically shield the interrupter.

3,686,605

THERMOSTATIC FOR FIRE ALARM SYSTEM

Charles John Hire, Pittsford, N.Y., assignor to Fasco Industries, Inc., Rochester, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,712
Int. Cl. H01h *13/52, 37/04, 37/54*
U.S. Cl. 337—334 **7 Claims**



A bimetallic, temperature-responsive disc is mounted for limited axial reciprocation in a generally cup-shaped metal housing between an internal, circumferential shoulder, which is formed in the housing adjacent its closed end, and a normally open, flexible switch arm, which is mounted in its open end. The closed end of the housing may be flexible, or it may house a reciprocable test button. Normally the disc is bowed toward the closed end of the housing; but when its ambient temperature exceeds a predetermined value, it flexes so that its edge engages the circumferential shoulder, and its center snaps in the direction of the switch arm far enough to close the latter. When the disc is in its normal state, the test button or flexible closed end of the housing may be pushed to shift the

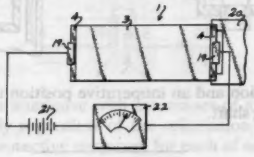
disc axially in the housing far enough to close the switch without flexing the center of the disc.

3,686,606

ELECTRICAL HUMIDITY SENSING ELEMENT

Paul E. Thoma, Burlington, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 776,342, Nov. 18, 1968, abandoned. This application Aug. 24, 1970, Ser. No. 66,319
Int. Cl. H01c 13/00
U.S. Cl. 338—35 21 Claims



A varying dimension electrical humidity sensing element for use in a humidity control and/or humidity indication system. The element includes a moisture sensitive material, which is capable of varying its dimension with changes in relative humidity, and a series of interconnected, electrically conductive particles of hydrophobic carbon are distributed within the moisture sensitive material. Dimensional changes in the moisture sensitive material caused by variations in moisture conditions act to vary the electrical resistance of the element and provide an indication of the relative humidity.

3,686,607

HIGH FREQUENCY SHIELD FOR SPARK PLUG BOOT HAVING SUPPRESSION COIL THEREIN

Norman H. Berry, Detroit, Mich., assignor to Whitakercable Corporation, North Kansas City, Mo.

Filed Feb. 5, 1971, Ser. No. 112,896
Int. Cl. H01c 1/06
U.S. Cl. 338—66 8 Claims

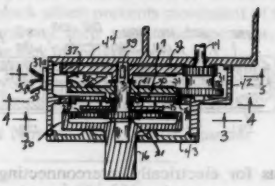
A high frequency shield for use with a spark plug lead having an electrical discharge suppression coil interposed between the plug and the end of the lead and contained within a portion of the spark plug boot for confining electrical emissions emanating from the suppression coil to an area within the limits of the shield. The shield employs a support member adapted to be positioned over the grounded metallic body portion of the plug while a metallic electrical emission controlling screen is held in surrounding relationship to the segment of the boot containing the suppression coil therein by an elongated, rigid, combination support strip and grounding element extending between the shielding screen and the base member. The support strip is adapted to be bent from its normal straight-line configuration to a right-angle configuration to enable the shield to be used on conjunction with either the conventional, straight type spark plug boot or the right-angle type boot.

3,686,608

SPEED REDUCER AND POSITIONING DEVICE

Eric C. Wahlberg, 32 8th St., Stamford, Conn.

Filed June 1, 1970, Ser. No. 41,820
Int. Cl. H01c 5/02; H01h 85/14, 85/16
U.S. Cl. 338—162 7 Claims



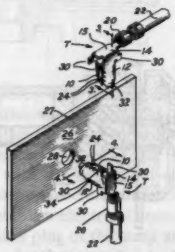
Two mechanical elements are mounted for independent rotation in the same direction about a common a axis. The difference of the rates of rotation of the two mechanical elements is converted into a resultant mechanical rate of rotation of an output shaft. An electrical element may be mounted on each of the mechanical elements in electrical coactive relationship providing a variable electrical value dependent on the relative angular displacement of the two mechanical elements when the electrical elements are connected into an electrical circuit.

3,686,609

GROUND TERMINAL

Wallace A. Hansen, Glen Ellyn, Ill., assignor to Essex International, Inc., Wayne, Ind.

Filed April 13, 1971, Ser. No. 133,634
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 10 Claims



A ground terminal includes a pair of elongate resilient fingers which are flexible relative to each other and which include serrated saw tooth edges which extend in a direction away from the axes of the fingers and the saw teeth of each of the fingers also extend toward each other such that the terminal is adapted to be coupled either to the peripheral edge of a grounding panel or in an aperture in the panel.

3,686,610

Patent Not Issued For This Number

3,686,611

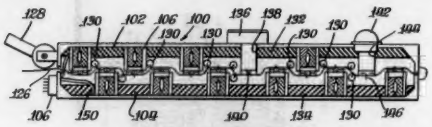
Patent Not Issued For This Number

3,686,612

ELECTRICAL CONNECTOR

John W. Clements, Naperville, Ill., assignor to Flexicon Electronics, Inc.

Filed March 5, 1968, Ser. No. 715,119
Int. Cl. H05k 1/00
U.S. Cl. 339—17 CF **6 Claims**



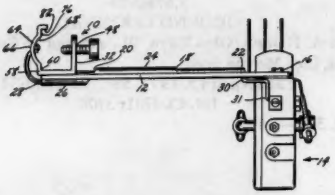
Apparatus for electrically interconnecting a plurality of electronic components. In particular, an electronic interconnection system by means of which a plurality of electronic components may be electrically interconnected without the need for conventional pin and socket arrangements.

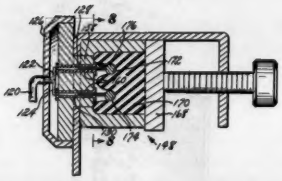
3,686,613

SECUREMENT DEVICE

Jakier Barski, 9 Weller Terrace, Saddlebrook, N.J.

Filed Feb. 9, 1970, Ser. No. 9,645
Int. Cl. H01r 7/08
U.S. Cl. 339—21 R **8 Claims**





A securement device for retaining a unit in a predetermined position proximate to a support, while the unit maintains isolated electrical contact with the support. The device includes a bracket with one or more electrical contacts in opposed alignment with a stop bolt. The contacts are connected to the unit. Surrounding the contact is the receiving portion of the bracket forming a channel within which the support is located. The stop screw securely positions the support, the contact abutting an isolated electrical line in the support.

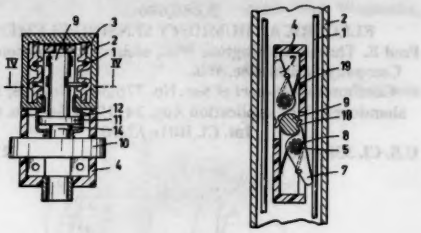
3,686,614

CONNECTING PLUG FOR A CURRENT SUPPLY RAIL

Kauko Kalervo Hyrylainen, Helsinki, Finland, assignor to Oy Nokia AB, Helsinki, Finland

Filed Feb. 1, 1971, Ser. No. 111,322
Claims priority, application Finland, Feb. 3, 1970, 291/70
Int. Cl. H01v 9/00
U.S. Cl. 339—21 R **8 Claims**

A connecting plug for a current supply rail, provided with contact fingers mounted in the plug pivotably around fixed shafts perpendicular to the conductors of the supply rail. The plug is further provided with a separate rotable operating shaft extending in parallel with said pivot shafts of the contact fingers and actuating said contact fingers selectively between a



contact position and an inoperative position upon rotation of the operating shaft.

3,686,615

Patent Not Issued For This Number

3,686,616

FASTENER

William R. Bowerman, 2457 Jasu Dr., Lawrence, Kans.

Filed Dec. 21, 1970, Ser. No. 99,994
Int. Cl. A44b 17/00
U.S. Cl. 339—38 **7 Claims**

A cam shaped prong on one part locks with a shouldered portion of another part by pressing one against the other. The parts are separated by an angular relative motion causing the prong to pivot and disengage. In one embodiment, the fastener is in the form of a removable cover as a protective device for temporarily blocking the socket of an electrical outlet. The cover is formed of a resilient, flexible material having a tab on one side and a pair of spaced prongs on the other side. The prongs are formed with facing shoulders which latch onto a socket when pressed therein. The prongs also are configured with cam surfaces which work against the edges of the socket to produce a spreading motion of the prongs when the cover is rotated whereby it may be released from the socket.

3,686,617

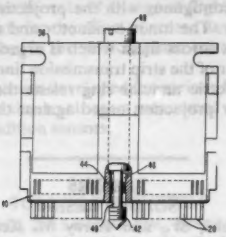
MULTI-CONTACT ELECTRICAL CONNECTOR ASSEMBLY

Edward C. Uberbacher, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 30, 1971, Ser. No. 129,431
Int. Cl. H01r 25/00
U.S. Cl. 339—49 R **7 Claims**

An insulator housing is provided having a plurality of openings extending from the back face to the front face thereof. The plurality of openings are located symmetrical about a vertical and horizontal axis passing through the middle of the front face of the housing. The horizontally adjacent openings are staggered vertically. A plurality of extensions extend forward from the front face of the insulator housing, each extension having a vertical member and two horizontal members extending laterally from opposite sides of the vertical

member, one at either end thereof. A contact is located within each of the openings and extends forward of the openings coextensive with the extensions. The location of the extensions and the orientation of the horizontal members are such



that the extensions interleave with extensions of an identical connector assembly regardless of the orientation to form a guide means and protective enclosure for each of said contact members.

3,686,618

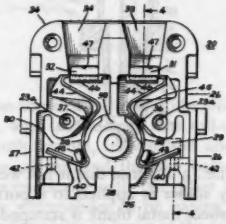
LAMPHOLDER

Richard J. Gales, Bethel, Conn., assignor to General Electric Company

Filed July 17, 1970, Ser. No. 55,912

Int. Cl. H01r *33/08*

U.S. Cl. 339—53 **4 Claims**



A lampholder, for use with a lamp having a pair of connection pins, includes an insulating housing with a pair of recesses elongated in the direction of an axis through the connection pins. The housing also includes a pair of channels, with each channel extending between one edge of the housing and one of the recesses. A pair of contacts are mounted in the housing. Each contact has an elongated, resilient pin engaging section positioned adjacent one of the recesses.

3,686,619

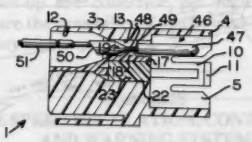
ELECTRICAL CONNECTOR CONSTRUCTION

Willard B. McCardell, Jr., Madison Heights; John D. Bissland, Westland, and Roman J. Witek, Jr., Romulus, all of Mich., assignors to Essex International, Inc.

Filed Aug. 19, 1970, Ser. No. 65,058

Int. Cl. H01r *13/40*

U.S. Cl. 339—59 M **12 Claims**



An electrical connector construction comprises a pair of body members formed of insulating material and adapted to be joined together end-to-end, each of the bodies having a plurality of rows of parallel openings adapted for the accommodation of interfitting electrical terminals. Each terminal has between its ends a zone of reduced cross section. The wall of each opening of each body member is constituted in part by a resilient, deflectable arm having a projection thereon which extends inwardly of its associated opening so as to be accommodated in a reduced cross section zone of the associated terminal, thereby providing a releasable latch by means of which each terminal removably may be secured in its associated opening. Each body member has a recess for the accommodation of a locking block which prevents movement of the latch projections outwardly of their associated openings, thereby providing a positive lock for each terminal.

3,686,620

Patent Not Issued For This Number

3,686,621

ELECTRIC LAMPHOLDERS

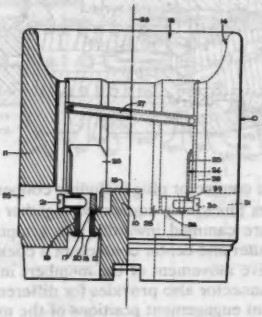
Reginald Ruston, Birmingham, England, assignor to Rowlands Electrical Accessories Limited, Smethwick, Warley, Warwick, England

Filed March 21, 1969, Ser. No. 809,200

Claims priority, application Great Britain, March 21, 1968, 13,665/68

Int. Cl. H01r *7/30*

U.S. Cl. 339—67 **8 Claims**



A lampholder for a screw-cap electric lamp comprises a socket and supported within the socket a ring of resilient wire which forms the screw thread of the lampholder and which also acts as a first centering means for the lamp. The lampholder is provided with a side contact which includes a number of contact portions spaced circumferentially of the interior of the socket to establish electrical contact with the circumference of the threaded plug of the lamp and also to act as a second centering means for the latter.

3,686,622

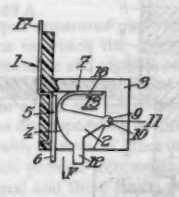
RAPID CONNECTION DEVICE FOR AN ELECTRICAL CONDUCTOR

Francois Robert Bonhomme, Saint-Cloud, France, assignor to Connectronics Corporation, New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,644

Int. Cl. H01r *9/06*

U.S. Cl. 339—217 R **14 Claims**



A rapid connection device for an electrical conductor comprises a flat element mounted in a support so as to be rotatable

around an axis of rotation perpendicular to its middle plane. The flat element and support have a complementary hollow and projection forming the axis of rotation. The flat element has at its periphery a gripping surface which faces a support surface provided on the support. One at least of the gripping and support surfaces are metallic and electrically conducting. Elastic means urge the flat element in a direction of rotation so that after positioning an electrical conductor between the surfaces, the elastic means facilitates the wedging and locking of the conductor between the surfaces under the action of traction exerted on the conductor. The elastic means is constituted by a flexible strip which is an integral part of the flat element. Consequently the connector is easily and cheaply manufactured by stamping, molding, etc.

3,686,623

COAXIAL CABLE CONNECTOR PLUG

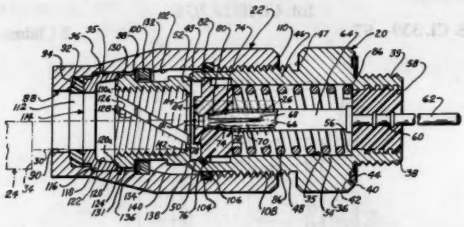
John P. Nijman, Scarborough, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brooke, Ill.

Filed Nov. 13, 1969, Ser. No. 876,542

Claims priority, application Canada, Nov. 26, 1968, 036,207

Int. Cl. H01r *17/04*

U.S. Cl. 339—177 E **3 Claims**



A coaxial cable connector plug including cooperatively engageable members threadably connected together and having contacts which are cammed inwardly into gripping relation with respective outer and center contacts of a coaxial cable in response to relative movement of the members in a securing direction. The connector also provides for different camming actions at different engagement positions of the members for preventing damage from overtightening and for preventing unwanted turning of the coaxial cable during tightening. The connector is further constructed so as to prevent its internal elements from falling out when the members are fully disengaged.

3,686,624

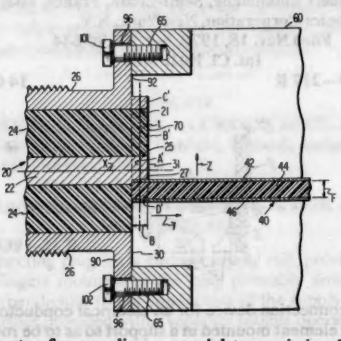
COAX LINE TO STRIP LINE END LAUNCHER

Louis Sebastian Napoli, Hamilton Square, and John Joseph Hughes, Spotswood, both of N.J., assignors to RCA Corporation

Filed Dec. 15, 1969, Ser. No. 885,083

Int. Cl. H01r *17/04*

U.S. Cl. 339—177 R **15 Claims**



A connector for coupling a coaxial transmission line to a strip transmission line includes a coaxial structure having an inner conductor projecting beyond the end of the connector a predetermined distance. A portion of the dielectric annular ring of the coaxial structure also projects beyond the end of the connector contiguous with the projecting portion of the inner conductor. The inner conductor and dielectric projections have a flat across them which is urged into registration with a conductor of the strip transmission line. The contiguous projecting dielectric annular ring resists the bending of the inner conductor projection urged against the strip transmission line.

3,686,625

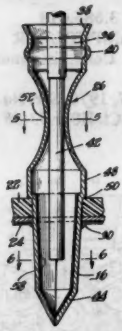
SOLDER RESIST

John H. Krehbiel, Sr., and Kerry M. Krafthefer, both of Downers Grove, Ill., assignors to Molex Products Company, Downers Grove, Ill.

Filed Dec. 10, 1969, Ser. No. 883,859

Int. Cl. H01r *9/06*

U.S. Cl. 339—275 B **14 Claims**



A solder resist, i.e., a material that is not wet by and hence not adhered to by solder is applied to a portion of a sheet metal blank. The sheet metal blank is stamped and formed to produce a substantially cylindrical female terminal for receipt of a plug-in male terminal as of a solid state device. The terminal is flow soldered in place in a printed circuit board, and the solder resist prevents solder from adhering in areas where it would adversely affect operability of the female terminal.

3,686,626

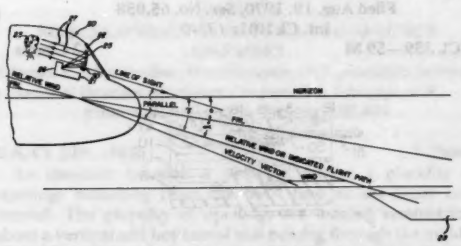
AIRCRAFT INSTRUMENT

Charles Donald Bateman, and Lyle J. Noland, both of Bellevue, Wash., assignors to United Control Corporation

Filed June 3, 1970, Ser. No. 42,918

Int. Cl. G08g *5/00*; B64c *13/50*, *15/00*

U.S. Cl. 340—27 NA **21 Claims**



An aircraft instrument providing visual flight path guidance to the pilot during landing approach, to clear an obstacle or the like. A head-up collimated display has a transverse bar positioned in accordance with a signal representing the angle of attack of the aircraft, with a corrective bias, which indicates to the pilot the flight path of the aircraft. The display includes

a vertical scale positioned with respect to a horizontal reference, indicating to the pilot the angle of the path from the aircraft to a point on the ground.

The angle of attack signal displayed by the bar is biased by a signal derived from the rate of change of flight path of the aircraft to compensate for the effect of errors, as caused by winds having a component in the vertical plane containing the flight path.

Synthetic signals are developed for various flight conditions minimizing errors due to air mass movement and inherent inaccuracies of condition sensors.

3,686,627

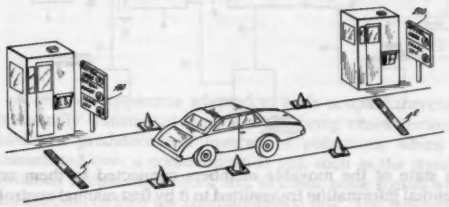
TOLL BOOTH SYSTEM

Louis D. Rubenstein, 2911 Barnes Ave., Bronx, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,821

Int. Cl. G08g *1/01*

U.S. Cl. 340—31 R **5 Claims**



A series of two consecutive toll booths along a single lane of access and exit, with toll-due sign, the toll-receiving receptacle, the toll-booth treadle, information and direction signs, thank you signs, alarms and the like being for each booth coordinated automatically with the other booth, permitting two consecutive automobiles to be paying tolls at the same time, the two automobiles to leave at the same time, and two other automobiles next in line to move to the respective vacant toll booths, with the sign at the first vacant toll booth directing the first other automobile to proceed to and pay ahead at the second toll booth and thereafter a sign at the first toll booth directing the second other automobile to pay here the toll at the first toll booth, with a sign at the second toll booth directing the first other automobile to pay here at the second toll booth, with a thank you sign at each toll booth activatable and the pay-toll signs deactivatable by payment of the toll, and with each second automobile being able to proceed past the second toll booth without setting off an alarm when already the second automobile has paid its toll at the first toll booth, a first automobile also being permitted to erroneously pay toll at the first toll booth and to thereafter proceed past the second toll booth without setting off an alarm, the mechanisms of the automatically coordinated toll booths being automatically reset for repeat operation, in this manner permitting each available single lane to serve to collect tolls from a plurality of customers simultaneously to thereby speed-up toll collection per highway lane and to thereby reduce the possibility of traffic jams during rush hours and/or on busy highways.

3,686,628

VEHICLE SPEED REGULATION, CONTROL MEANS, AND WARNING SYSTEM

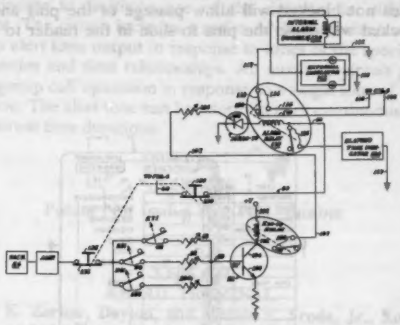
Arthur E. Keller, 8937 Carla Dr., Indianapolis, Ind., and Claude W. Earles, 1013 E. Buchanan St., Plainfield, Ind.

Filed Dec. 29, 1969, Ser. No. 888,598

Int. Cl. B60q *1/54*

U.S. Cl. 340—53 **29 Claims**

A vehicle speed regulation and control system, utilizing radio signals from highway transmitters, which provides an indication to the vehicle driver of the speed limit along that portion of the highway, and provides other psychological controls and indications relating to vehicle speed.



3,686,629

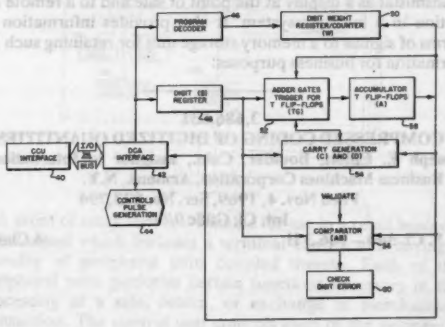
SELF-CHECK NUMBER GENERATION

Frank K. Yu, Burlington, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 16, 1970, Ser. No. 46,711

Int. Cl. G06f *11/10*

U.S. Cl. 340—146.1 AJ **14 Claims**



A self-check number generating device for generating/validating check numbers associated with a data entry/verification or data transmission system. The generating device is operable in a plurality of modes and may be used for generating or merely validating a check number to be appended to a data number or word.

3,686,630

INPUT-OUTPUT APPARATUS

Kenneth P. Zubay, 1326 2nd St. N.W., Rochester, Minn.

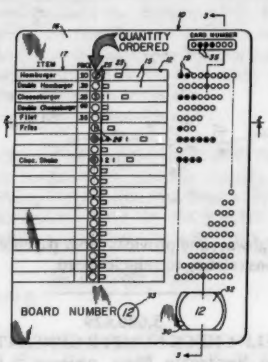
Filed Feb. 10, 1971, Ser. No. 114,251

Int. Cl. G08b *5/00*

U.S. Cl. 340—149 A **11 Claims**

An input-output apparatus particularly adapted for use in business systems in which the input apparatus is an order board which is portable and capable of operation by the ordering or consuming public. The board has a plurality of slide members therein which are selectively moved in ordering to various locations corresponding to quantities of an item to be ordered. A plurality of rows of holes in the board aligned with the slide members provide information of the quantity of an item to be ordered and these holes are blocked by the slide members when moved in a manner corresponding to the number of items to be ordered. A readout device in the form

of a plurality of contact pins having the same array orientation as the holes in the order board will be brought into alignment with and inserted into the holes in the board wherein those holes not blocked will allow passage of the pins and those blocked will cause the pins to slide in the reader to actuate



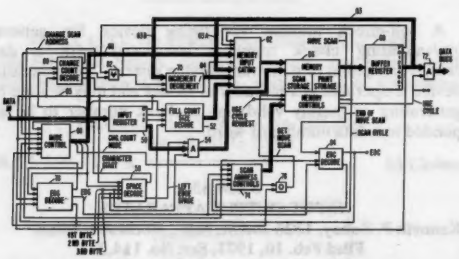
contacts and energize signaling devices corresponding to the number of items ordered. This information is available for transmittal as a display at the point of sale and to a remote location in a business system. It also provides information in terms of signals to a memory storage unit for retaining such information for business purposes.

3,686,631

COMPRESSED CODING OF DIGITIZED QUANTITIES

Joseph E. Elliott, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,794
Int. Cl. G08c 9/00
U.S. Cl. 340—146.3 H **4 Claims**



A digital code is developed for alphanumeric characters to represent areas covered by the characters in digital form; this code is compressed by comparing full count codes of successive linear arrays of areas with a preceding scan and representing the differences in successive scans by a change code. The compressed data codes of the characters are fed from storage to an expansion system which restores the codes for the individual scans to full count form for control of photocomposing apparatus.

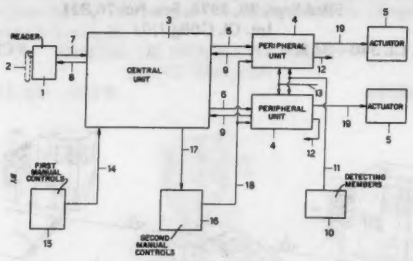
3,686,632

TAPE PROGRAMMER FOR OPERATING MACHINES OF VARIOUS TYPES, IN PARTICULAR OPERATIONAL MACHINES AND TEST MACHINES

Gian Battista Olcelli, Milan; Sergio Caliari, Sesto San Giovanni, and Guiseppe Montessori, Milan, all of Italy, assignors to Pirelli S.p.A., Milan, Italy

Filed June 2, 1970, Ser. No. 42,691
Int. Cl. H04q 9/00
U.S. Cl. 340—147 R **21 Claims**

A tape programmer which comprises a tape reader, a central unit, a plurality of peripheral units and a like number of actuators for the movable members of the machine. The central unit receives, decodes and sends to the peripheral units some of the information transmitted by the reader, eventual information transmitted by the peripheral units with respect to



the state of the movable members connected to them and eventual information transmitted to it by first manual controls. Furthermore, the central unit authorizes second manual controls upon the reception of other information transmitted by the tape reader or particular information transmitted by said first manual controls.

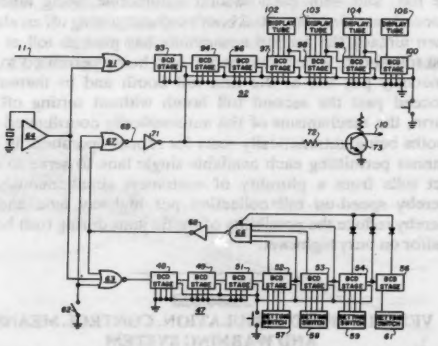
3,686,633

PULSE RESPONSIVE COUNTING CIRCUITS

Michael A. Carmody, Stanhope, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 4, 1970, Ser. No. 95,280
Int. Cl. H04q 1/32
U.S. Cl. 340—168 CC **9 Claims**

A system in which timing information is remotely set into a projectile to be fired. The system is configured to connect a time setting device, which contains (1) a plurality of setting switches, and (2) a plurality of read-out devices to an integrated circuit in the projectile by a minimum number of



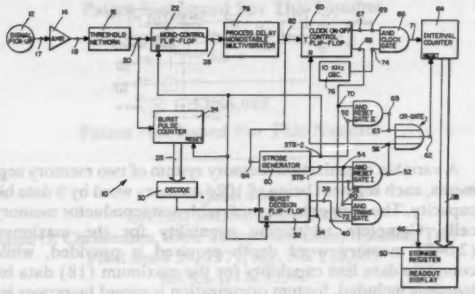
wires. The system functions to allow (1) hand setting of the timing information and (2) an error check, both at a remote location. The error check is provided as a visual read-out of data sent back from the integrated circuit after the timing information has been set.

3,686,634

PULSE RATE MONITOR AND INDICATOR SYSTEM UTILIZING A BURST PULSE COUNTER AND A PULSE INTERNAL COUNTER

Franklin L. Malchman, Montgomery, and William J. Raddi, Philadelphia, both of Pa., assignors to ESB Incorporated

Filed April 2, 1971, Ser. No. 130,632
Int. Cl. G06m 01/00; H03k 05/20
U.S. Cl. 340—171 R 9 Claims



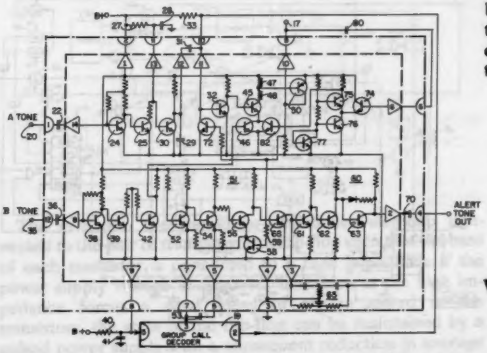
A receiver apparatus adapted to have coupled thereto intentionally transmitted signals, each being characterized as having a predetermined number of pulsations, which are transmitted over a communication link such as the standard switched telephone network and, at times, noise signals which are introduced into the communication link. The receiver includes measuring means arranged to measure the time interval between successive signals coupled thereto, and signal verification means to verify that each signal coupled to the receiver is either an intentionally transmitted signal or a noise signal. In the event that a noise signal is coupled to the receiver, the signal verification means is arranged to abort measurements of the measuring means. Measurements not aborted are indicative of the time interval between each two successive intentionally transmitted signals coupled to the receiver.

3,686,635

INTEGRATED CIRCUIT DECODER RESPONSIVER TO TWO SEQUENTIAL TONES, WITH GROUP CALL PROVISIONS

Raymond J. Millington, and John R. Rezek, both of Coral Springs, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 9, 1971, Ser. No. 151,460
Int. Cl. H04b 1/00; H04n 11/02
U.S. Cl. 340—171 R 15 Claims



Decoder circuit for use with two tone sequential calling signal, which responds only to two tones of predetermined frequencies, amplitudes, durations and time spacing. The circuit is constructed in integrated circuit form with the components critical to the timing of the tones provided as external components to facilitate use of the decoder in different systems. The circuit includes a series AND gate which actuates an alert tone output in response to tones of the specified frequencies and time relationships. An auxiliary circuit provides group call operation in response to a single tone of long duration. The alert tone can be intermittent or continuous and of different time durations.

3,686,636

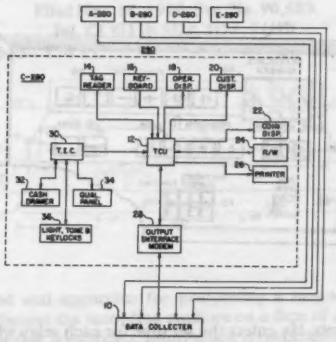
Patent Not Issued For This Number

3,686,637

RETAIL TERMINAL

James E. Zachar, Dayton, and Walter E. Srode, Jr., Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,971
Int. Cl. G06f 3/04, 15/22
U.S. Cl. 340—172.5 52 Claims



A point of entry terminal suitable for use in a retail business is described which includes a terminal control unit having a plurality of peripheral units coupled thereto. Each of the peripheral units performs certain functions necessary in the processing of a sale, return, or exchange of merchandise transaction. The control unit controls each of the peripheral units in accordance with a series of program instructions associated therewith. In addition to the normal transactions, there are several special types of transactions. The operator of the terminal is guided through each portion of each transaction by special messages informing him of what entries are to be made for that portion. The terminal is connected in a real-time, on-line manner to a data collector for recording data concerning the transaction for processing for inventory control and the like.

3,686,638

Patent Not Issued For This Number

3,686,639

DIGITAL COMPUTER-INDUSTRIAL CONTROLLER SYSTEM AND APPARATUS

William E. Fletcher, Woburn, and Leon B. Rosseau, Sherborn, both of Mass., assignors to Modicon Corporation, Bedford, Mass.

Filed Dec. 11, 1969, Ser. No. 884,224
Int. Cl. G06f 3/02
U.S. Cl. 340—172.5 36 Claims

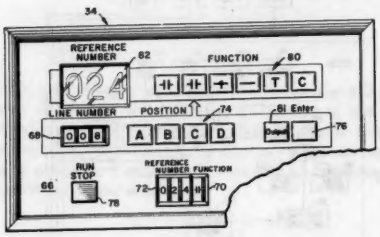
A small general purpose digital computer is utilized as the basic element of an industrial controller. The digital computer

is provided with an executive program comprising function simulating modules. Relay logic, timer and counter simulating modules are disclosed. The modules provide an iterative format for a control circuit to be simulated the format comprising a large number of identical parallel circuit lines each controlling a numbered relay. Each circuit may have a specified number of basic electrical elements connected in series with its relay. The types of electrical elements disclosed are a normally open switch, a normally closed switch, a branch function, and a wire connection or no function.

The condition of any particular one of the first three types of electrical elements is controlled by a specified one of the number of relays.

A control program comprises a particular choice of electrical elements entered in the circuit lines of the ladder diagram to correspond to an actual circuit diagram of a desired control circuit.

The system is provided with a simple detachable programming panel or console with which an ordinary industrial engineer having no computer programming experience can program his control program by positioning each required basic electrical element in the format provided and specifying the relay of another circuit line controlling the condition of



the elements. He enters the set time for each relay which is to be timer controlled. An internal clock is provided for the timing function. He also enters the total count and the simulated relay whose cycles are to be counted for each relay which is to be counter controlled.

A plurality of the numbered relays may each be conditioned only by an external device connected to an identically numbered input terminal. Another plurality of the numbered relays each control the signal supplied to an identically numbered output terminal which may be connected to external devices.

In use, the executive program continuously and repeatedly runs through the ladder diagram control circuit line by line, updating the condition of each electrical element in accordance with the referenced numbered relay; updating the condition of each numbered relay in accordance with the condition of the electrical elements or input terminal in circuit therewith; and updating the condition of each output terminal in accordance with its associated numbered relay.

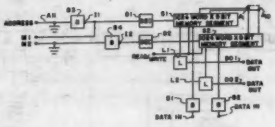
Provision is made for communicating with the computer controller via ordinary telephone lines from a central station. The original computer controller is delivered to a customer with the executive program in memory. The control program is added by the customer through the detachable programming console. Both the executive and customer chosen control program can then be read out to the central station and printed or recorded on punched tape for full documentation thereof. Further units can be supplied to the customer preprogrammed through use of the punched paper tape. The central station also can communicate with a remote computer controller by means of a central programming console and has the ability to diagnose breakdowns of the computer controller and readin to or readout from any memory location in the remote computer controller.

3,686,640

VARIABLE ORGANIZATION MEMORY SYSTEM

Stanley R. Andersen, Hopewell Junction, and Robert G. Kinkade, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed June 25, 1970, Ser. No. 49,598
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 **3 Claims**



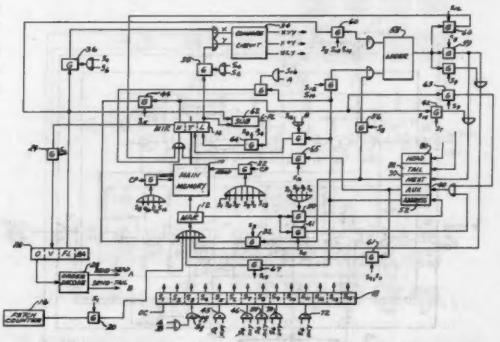
A variable organization memory system of two memory segments, each segment being of 1024 memory word by 9 data bit capacity. The segments are preferably semiconductor memory cells. Complete addressing capability for the maximum (2,048) memory word depth required is provided, while complete data line capability for the maximum (18) data bit length is included. System organization is varied by proper interconnection of various modifying input lines for memory word dimension and by driving data in and data out lines in parallel for the data bit dimension. Thus, for a 1024 memory word by 18 data bit organization, output levels to the memory segments from a buffer invert modifying input are permanently at an up logic level. This enables the two memory segments and gates set pulses to the data lines of both segments. Alternatively, when a 2,048 memory word by 9 data bit organization is desired, the inverted output from a buffered modifying input to the first memory segment is reinverted to the true complement of the input on the first modifying input and connected to the second memory segment while the data lines are driven in parallel.

3,686,641

MULTIPROGRAM DIGITAL PROCESSING SYSTEM WITH INTERPROGRAM COMMUNICATION

William A. Logan, Covina; Richard M. Holmes; William M. Denny, both of Sierra Madre; Michael J. Mahon, Pasadena, all of Calif.; Stephen Skalski, III, Westland; Gerald L. Henige, Royal Oak, and Shreekant Bedekar, St. Clair Shores, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Sept. 30, 1970, Ser. No. 76,964
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **7 Claims**



A multiprogram computer system in which data is exchanged asynchronously between programs by transfer of data, on command of one program, to a queue in memory and, on command of another program, from the queue to the other

program. The queue is double-ended so that data can be added or removed from either end of the queue to give programmatic control of priority. System integrity is maintained by providing a key word or name associated with each item in the queue. Any command to remove data from the queue searches for the item under a particular name.

3,686,642

Patent Not Issued For This Number

3,686,643

Patent Not Issued For This Number

3,686,644

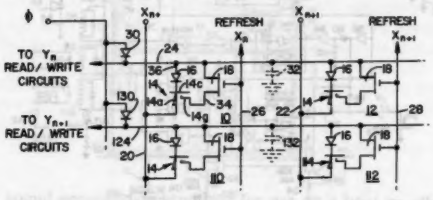
GATED DIODE MEMORY

Alton O. Christensen, 8906 Valley View Lane, Houston, Tex.

Filed April 29, 1971, Ser. No. 138,417

Int. Cl. G11c *11/40*

U.S. Cl. 340—173 R **5 Claims**



A very small and fast-acting memory cell for MOS or MNS circuitry is provided by using a gated diode in place of an IGFET as the memory element of a half-inverter memory array. A preferred space-saving topology of a memory cell in accordance with this invention is shown.

3,686,645

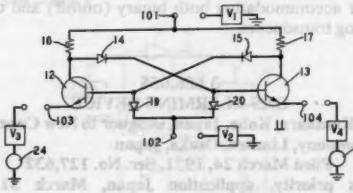
CHARGE STORAGE FLIP-FLOP

Samuel Brojdo, Westfield, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1968, Ser. No. 764,186

Int. Cl. G11c *11/40, 11/42*; H03k *3/286*

U.S. Cl. 340—173 FF **14 Claims**



The invention uses nonlinear impedance elements connected to the pair of transistors in a flip-flop such that the base of each transistor is connected to a high impedance if the power supply voltage is removed. Inasmuch as the high impedance forces a slow decay of charge stored in the transistors, the state of the flip-flop can be maintained by a pulsed power supply with a consequent reduction in average stand-by power. Further, using photosensitive transistors, photogenerated charge can be integrated and held. Advantageously, the apparatus is provided as an integrated circuit semiconductor memory array.

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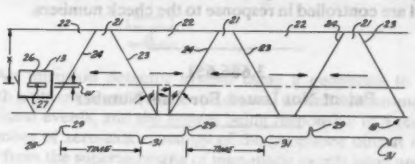
MAGNETIC POSITIONING MECHANISM WITH TRAPEZOIDAL HEAD

Michael I. Behr, South Pasadena, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,583

Int. Cl. G11b *5/22, 5/52, 21/10*

U.S. Cl. 340—174.1 C **13 Claims**



Method and apparatus for positioning a magnetic transducer adjacent the recording medium on a face of a magnetic recording disk is provided. Information is recorded on the disk in one or more information zones with an information head arranged adjacent each of these zones. A control zone provided on a face of the disk is adjacent a control transducer which is coupled to the information heads. The heads are also coupled to a mechanical position controller for positioning the heads radially on the disk. Recorded in the control zone are a plurality of magnetic transitions in lines extending at an angle relative to a disk radius. In a short segment, neglecting disk curvature, the magnetic regions bounded by the transition lines are in the form of interlaced trapezoids, and the recording medium moves relative to the control transducer in a direction parallel to the parallel sides of the trapezoids. The time required for the magnetic transducer to travel from one magnetic transition to the next is therefore a function of the transducer's position between the parallel sides of the trapezoid, that is, the radial position relative to the disk. The time interval so measured is compared with a reference time signal to generate an error signal which is fed back to the mechanical position control so that the magnetic transducers are positioned in the desired position.

3,686,650

ADDRESSING SYSTEM WITH MEANS TO CHECK MECHANICAL STABILITY

Ralph A. Gleim, and Robert G. Groom, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

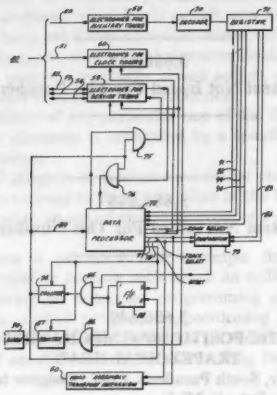
Filed June 1, 1971, Ser. No. 148,453

Int. Cl. G11b *5/00*

U.S. Cl. 340—174.1 J **5 Claims**

Auxiliary tracks of a disc file are used to verify the correct radial position of a movable head assembly relative to the data

tracks, to verify the mechanical stability of the head assembly after it has been moved, and to indicate continuously the angular position of the disc relative to the head assembly. Check numbers are recorded serially around the auxiliary tracks.



Some of the digits of each check number identify the track and the remaining digits of the check number identify the angular position. The storage and retrieval modes of the disc file system are controlled in response to the check numbers.

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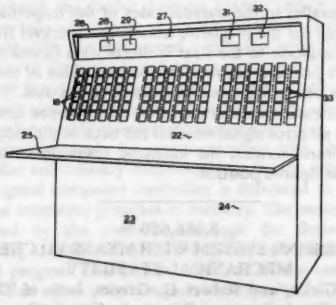
PRODUCTION MONITORING SYSTEM FOR PLURALITY OF WORK STATIONS

Albert L. Salenbien, Jr., Adrian, and William D. Wood, Waters, both of Mich., assignors to Worldtronic, Inc., Clare, Mich.

Filed Nov. 12, 1969, Ser. No. 875,742
Int. Cl. G08b *19/00*; H04q *3/00*
U.S. Cl. 340—213 Q **12 Claims**



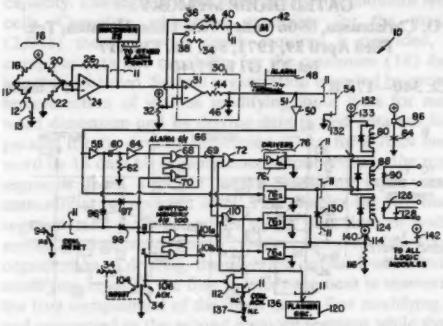
A production monitoring system having sensing means and operator controlled means at a work station for indicating production conditions to a central station. Visual indications at the central station of conditions for a plurality of work stations are by status indicators individual to the work stations or grouped stations. Operator controlled signals alter the status indicators to alert a central station attendant. Attendant acknowledgment of a signal causes it to be displayed on a panel common to a number of stations. Status and signals are applied to an output to a computer which is isolated from the plant and other monitoring system elements. In a system employing solid state active elements isolation is by means of transformers having shielded secondaries and employing plant ground for circuits on the primary side and a separate computer ground for circuits on the secondary side. Binary coding and decoding is employed to reduce in plant wiring.

3,686,654

ALARM SYSTEM EMPLOYING PLURAL MODULES ACCOMMODATING BINARY AND ANALOG TRANSDUCERS

Stephen B. Judlowe, 47 Sagamore St., Murray Hill, N.J.

Filed Oct. 19, 1970, Ser. No. 81,696
Int. Cl. G08b *19/00*
U.S. Cl. 340—213.1 **13 Claims**



An alarm system is formed of a plurality of alarm modules of similar construction, each module being connected to the output of a parameter monitoring transducer of either the continuous or discrete (e.g., switched) type. Each module includes a first portion for developing a digital signal characterizing the associated parameter as normal or off-normal. Like digital processing and output driver circuitry is included on each alarm module to provide an audio-visual alarm indication which changes stage when the alarm is acknowledged; for providing information regarding the occurrence of faults by system functions; for automatically initiating remedial action responsive to certain encountered alarm conditions; and for providing audio-visual alarm indications should an alarm signaling module be reset before the underlying alarm condition is remedied.

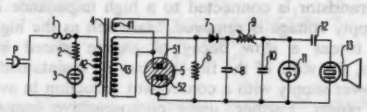
The module construction can provide digital and linear circuitry for accommodating both binary (on/off) and continuous, analog transducers.

3,686,655

GAS-ALARMING DEVICE

Riichiro Kasahara, Kobe, Japan, assignor to New Cosmos Electric Company, Limited, Osaka, Japan

Filed March 24, 1971, Ser. No. 127,632
Claims priority, application Japan, March 31, 1970, 45/27650
Int. Cl. G08b *17/10*
U.S. Cl. 340—237 R **4 Claims**



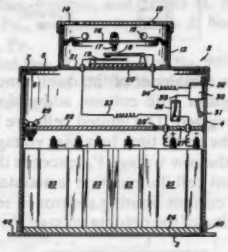
A gas-alarm device comprising a gas-detecting portion including an a.c. or d.c. power source, a semiconductor-type

gas-detecting element consisting of a gas sensitive semiconductor substance, and an output resistor all connected in series so that a voltage depending on the concentration of the gas appears across the output resistor; a circuit portion for converting said voltage across the output resistor of the gas-detecting portion into a d.c. voltage, a saw-tooth wave oscillating portion including a capacitor, a current limiting resistor series connected to said capacitor, both connected across said d.c. voltage, and a discharge tube, such as a neon lamp, having a negative resistance characteristic and connected in parallel with said capacitor; and a sound emitting device, such as a speaker; whereby the frequency and intensity of the alarm output sound are made variable depending on the concentration of the gas and the adjustment of said current limiting resistor as desired.

3,686,656
SUNKEN VESSEL LOCATOR

Charles D. Richards, 615 Gloucester Ave., Middlesboro, Ky.

Filed June 24, 1970, Ser. No. 49,228
Int. Cl. G08b *21/00*; B63b *17/00*
U.S. Cl. 340—240 9 Claims

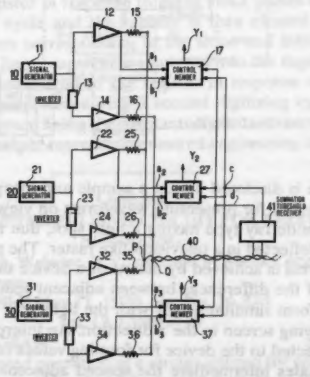


A sound-generating instrument for use on a boat or other watercraft arranged to operate only if the boat is submerged, and which generates a sound under water to aid in locating and recovering the same. When the device is carried under water with the sinking craft, a pressure-responsive switch connects a sound-generating device inside the instrument with a dry battery also inside the instrument. In lieu of a pressure-responsive switch, a switch which is field open until submerged in water may be used.

3,686,657
DEVICE FOR DISTRIBUTING HIGH-SAFETY TIME BASES

Roger Renoulin, Ernee, France, assignor to Societe Lannionnaise D'Electronique, Lannion, France

Filed Feb. 26, 1971, Ser. No. 119,256
Claims priority, application France, Feb. 27, 1970, 7007201
Int. Cl. G08b *23/00*; H03k *19/42*
U.S. Cl. 340—248 A 9 Claims

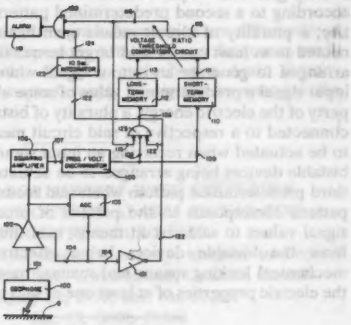


The invention pertains to the field of high-reliability time bases which are indispensable in certain installations for the processing of information for which no breakdown or malfunction can be tolerated and which comprise for this reason a combination of several generators of clock signals and a circuit producing a majority decision concerning the several signals generated to provide a corrected signal which can be compared to the output of each generator.

3,686,658
INTRUSION DETECTOR RESPONSIVE TO CHANGE IN DOMINANT FREQUENCY

Marvin D. Wilt, Dallas, Tex., assignor to Teledyne Industries, Inc., Geotech Division

Filed May 12, 1970, Ser. No. 36,603
Int. Cl. G08b *13/00*
U.S. Cl. 340—261 15 Claims

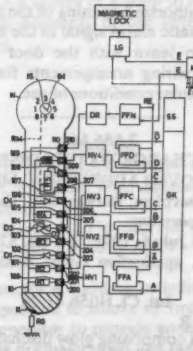


An intrusion detector system using a geophone to sense both ambient or environmental events, as well as man-made or cultural events, and the system being responsive to a reduced number of zero-axis crossings of the geophone output resulting from the superimposing of man-made events upon ambient events to detect intrusions. Zero-axis crossings are represented in a long-term memory and in a short-term memory or accumulator, and their contents are compared to determine when short-term conditions change as compared with averaged long-term conditions representing mainly environmental events. In one embodiment, when an intrusion is detected in this way the system requires at least one more such detection before setting off an alarm. The memory is updated with more recent information, but only when conditions appear to be ambient, and relatively free of unusual events.

3,686,659
ELECTRONIC LOCKING DEVICE

Sten L. Bostrom, Hagersten, Sweden, assignor to Dasy Inter S.A., Geneva, Switzerland

Filed Jan. 5, 1970, Ser. No. 634
Int. Cl. G08b *13/06*
U.S. Cl. 340—274 3 Claims



A locking device, comprising a mechanical locking means adapted to be electrically controlled, a source of electric ener-

gy, a receiver for receiving such energy, a key insertable into a mating keyhole means and arranged to thereby connect said source to said receiver for transmission of electric energy thereto, a number of target terminals distributed and spaced according to a first predetermined pattern within said keyhole means, an equal number of output terminals on said key distributed and spaced according to said first pattern, each output terminal being arranged, upon the correct insertion of said key into said keyhole means, to cooperate with a respective target terminal to supply electric energy thereto, a plurality of electric energy conducting paths within said key each leading from said source to at least one of said output terminals, a plurality of electric circuit components comprised within said paths and arranged to modify predetermined characteristic properties of electric energy propagated along said paths, to thereby generate output conditions on said output terminals according to a second predetermined pattern specific for the key, a plurality of circuit means each having an input connected to at least one of said target terminals and each being arranged to generate an output signal when receiving as an input signal a predetermined value of some characteristic property of the electric energy, a plurality of bistable devices each connected to a respective of said circuit means and arranged to be actuated when receiving an input signal therefrom, said bistable devices being arranged to be actuated according to a third predetermined pattern when said second predetermined pattern corresponds to the pattern of predetermined input signal values to said circuit means, said third output pattern from the bistable devices being effective to open said mechanical locking means and manual means for modifying the electric properties of at least one of said paths.

3,686,660

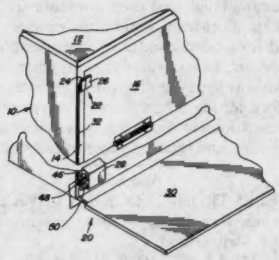
SHOWCASE ALARM SYSTEM

Hyman A. Massover, and David I. Shapiro, both of c/o Massover Bros., 30 W. Washington St., Chicago, Ill.

Filed June 11, 1970, Ser. No. 45,292

Int. Cl. G08b *13/08, 13/10*

U.S. Cl. 340—274 **7 Claims**



A door-alarm system for a merchandise showcase includes a floor-mat switch positioned behind the showcase in the area occupied by sales personnel, automatically disabling the system to permit authorized opening of the showcase and also providing an automatic alarm signal in the event the salesperson commences to leave with the door open. There are described various wiring arrangements for a multiple-door system to suit particular conditions of use.

3,686,661

GLOW DISCHARGE MATRIX DISPLAY WITH IMPROVED ADDRESSING MEANS

Graham Trevor Sharpless, Burgess Hill, England, assignor to U.S. Philips Corporation

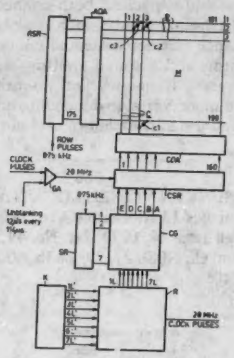
Filed July 6, 1970, Ser. No. 52,441

Claims priority, application Great Britain, July 4, 1969, 33,771/69

Int. Cl. H05b *41/24*

U.S. Cl. 340—324 R **16 Claims**

A display system comprising glow discharge cells located in a rectangular two dimensional matrix at the crossover points formed by a coordinate array of row and column conductors. The cells have an ignition voltage V_S that is higher than its "-hold" voltage V_M. A voltage V_R is applied in sequence to the row conductors for a given dwell time. A column register selectively applies a voltage V_C to given ones of the column conductors in accordance with the symbol to be displayed. The column voltages V_C are applied for only a fraction of the



row dwell time, the remainder of the dwell time being used to fill the column register with column addressing data for the next row to be energized. The ignited cells are held on during the remainder of the dwell time by a bias voltage V_B which, in combination with the row voltage V_R, exceeds the hold voltage of the cell. Constant cell illumination is maintained by reducing the value of a current limiting resistor in series with each cell upon termination of the column voltage V_C.

3,686,662

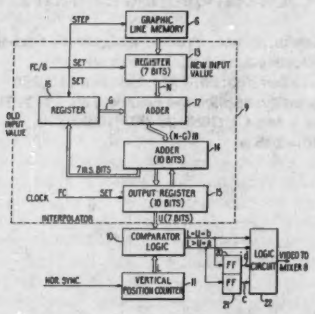
CIRCUIT ARRANGEMENT FOR THE PRESENTATION OF WAVEFORMS ON VIEWING SCREENS UTILIZING RASTER DEFLECTION

S. Stefan Blixt, and Dag Martin Andersson, both of Jakobsberg, Sweden, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,924

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 A **12 Claims**



There is disclosed herein a sample and inexpensive circuit arrangement for presenting waveforms on viewing screens of the cathode ray type having a light spot, due to the electron beam, deflected in a television-like raster. The presentation of waveforms is achieved by means of a device that delivers the value of the differences between adjacent spaced y values in digital form simultaneously with the light spot sweeping over the viewing screen in the x direction. An interpolation means is connected to the device for forming values of equidistant x-coordinates intermediate the spaced adjacent y values such that they are spaced close enough together to provide the

desired resolution in the *x* direction. A comparison circuit is connected to the interpolating means to compare the *y* values as formed and the pertinent position of the light spot in the y direction. Due to the comparison, a video signal is provided in accordance with logic criteria that makes it possible to present the desired waveform.

3,686,663

Patent Not Issued For This Number

3,686,664

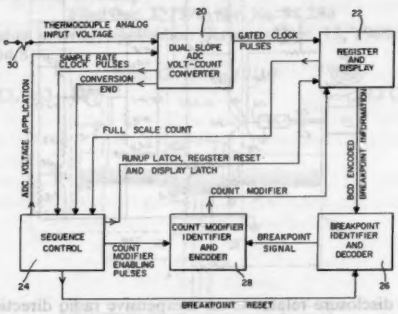
Patent Not Issued For This Number

3,686,665

DIGITAL FUNCTION GENERATOR

Laurence F. Elias, Penllyn, and James H. Magee, Southampton, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Dec. 31, 1969, Ser. No. 889,506
Int. Cl. H03k *13/16*
U.S. Cl. 340—347 AD **18 Claims**



A method and apparatus for converting substantially instantaneous values of a variable analog input to substantially instantaneous values of a variable digital output which is a nonlinear function of the variable analog input. A particular linear segment approximating that portion of a nonlinear function on which a particular instantaneous value of the analog input is located is identified by accumulating a corresponding digital count in a register in response to gated clock pulses during a first digitized cycle and the register is then cleared. Stored count modifiers corresponding to the slope and intercept of the identified linear segment are entered into the register and a count is accumulated in the register in response to gated clock pulses generated during a second digitizing cycle, the accumulated count being the substantially instantaneous value of the digital output representing desired engineering units.

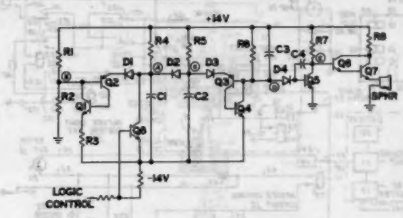
3,686,666

INTERRUPTED PULSING CIRCUIT FOR AUDIBLE SIGNALING

David R. Shuey, Webster, N.Y., assignor to Xerox Corporation, Fairfield, Conn.

Filed May 11, 1970, Ser. No. 36,225
Int. Cl. G08b *3/10*
U.S. Cl. 340—384 E **5 Claims**

The interrupted operation of a circuit utilized for energizing a speaker system utilized as a buzzer. A two stage relaxation oscillator circuit is utilized wherein the frequency of one oscillator is much higher than the frequency of the other oscillator. The charging rate of the circuitry within the higher frequency oscillator is slaved to the charging rate of the lower frequency oscillator until the discharge of the circuitry within the higher



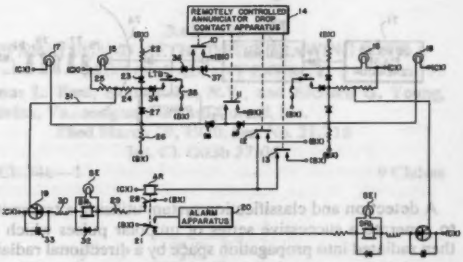
frequency oscillator, the signals from which are differentiated for application to the speaker. After the lower frequency oscillator discharges, the charging cycle begins again thereby providing an interrupted supply of signals to energize the speaker.

3,686,667

ANNUNCIATOR SYSTEM WITH CIRCUITRY PRODUCING AN OUTPUT ALARM SIGNAL FOR A DISCONTINUOUS LAMP

Manfred Schulz, Moeglingen, Germany, assignor to General Signal of Canada, Ltd., Owen Sound, Ontario, Canada

Filed July 22, 1970, Ser. No. 57,251
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 **3 Claims**



An annunciator system with a plurality of normally open drop contacts for controlling illumination of normally dark annunciator lamps. Supervisory circuitry for the indicator lamps includes a normally inactive supervisory detection device associated with a group of the lamps for manifesting when a lamp of the associated group of lamps is inoperable. Sensing means enables operation of the supervisory detection device in accordance with a failure of a lamp to maintain continuity in circuits through filaments of the several normally dark lamps of the group.

3,686,668

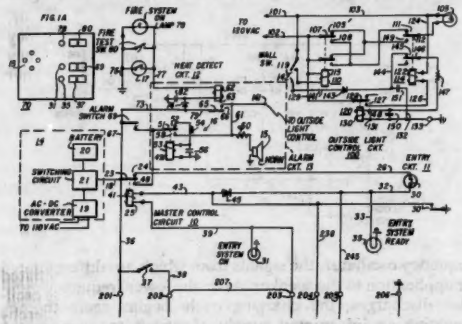
FIRE AND BURGLAR ALARM SYSTEM

John E. Durkee, Ft. Atkinson, Wis., assignor to Thomas Industries, Inc., Ft. Atkinson, Wis.

Filed March 4, 1970, Ser. No. 16,398
Int. Cl. G08b *19/00*
U.S. Cl. 340—420 **22 Claims**

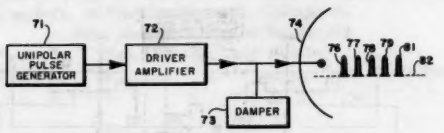
A security system for a building including a circuit having heat detectors responsive to smoke or fire in the building to enable an alarm generator to provide an alarm signal, and an entry circuit having normally open and normally closed entry switches for detecting an unauthorized entry of the building,

the entry circuit being energized whenever one of the entry switches is operated to enable the alarm generator to provide



a different alarm, and the entry circuit further having a ready indicator for indicating when an entry switch is operated.

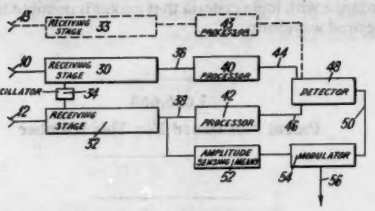
3,686,669
DETECTION AND CLASSIFICATION SYSTEM UTILIZING UNIPOLAR PULSES
William J. Toulis, 3175 Cauby St. 036, San Diego, Calif.
Filed April 24, 1970, Ser. No. 31,627
Int. Cl. G01s 9/02
U.S. Cl. 343—5 SA **3 Claims**



A detection and classification system utilizing a transmitter to generate a successive series of unipolar pulses which are then radiated into propagation space by a directional radiator; a receiving system to detect with an antenna and amplifier the especially distinctive low-frequency returns which are then filtered, processed and recorded in order to reconstruct and thus to classify the signal returns.

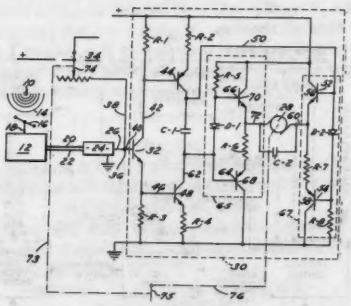
3,686,670
RECEIVER FOR USE WITH A DIRECTION FINDING OR RADAR RECEIVING SYSTEM
Max V. Callendar, Southend-on-sea, and Victor J. Cox, Thorpe Bay, both of England, assignors to Pye Limited, Cambridge, England
Filed March 19, 1970, Ser. No. 20,982
Claims priority, application Great Britain, March 28, 1969, 16,469/69
Int. Cl. G01s 3/48
U.S. Cl. 343—113 R **13 Claims**

A receiver for use with a direction finding or radar receiving system has a directional aerial array comprising at least two aerials. The receiver is arranged to produce an output in response to a signal received by the aerial array, the output indicating the direction of the source of the signal, relative to the aerial array, and comprises processors to derive from the signals received by each aerial of the array respective trains of pulses, the pulses of each train being in a predetermined phase relationship with the carrier waveform of the respective received signal, so that the output is a function of the time difference between the occurrence of pulses in one train and the



occurrence of pulses in at least one other said train the output having a maximum amplitude when the time difference tends to zero.

3,686,671
RADIO DIRECTIONAL CONTROL SYSTEM
George M. Holley, Jr., 510 Sheldon Road, Grosse Pointe, Mich.
Filed Oct. 29, 1969, Ser. No. 872,060
Int. Cl. G01s 3/42
U.S. Cl. 343—117 **2 Claims**

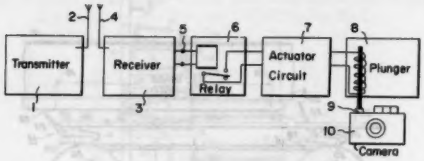


This disclosure relates to an inexpensive radio directional control system having particular utility for marine applications, and wherein a directional antenna on the vessel is angularly adjusted relative to a fixed distant radio transmitter and thereafter any angular variation from such setting causes the output characteristic of a radio receiver connected to the antenna to increase or decrease in accordance with the direction of such variation, and such output characteristic variation is utilized to control operation of a reversible motor connected to some device, such as the vessel's rudder, or to the directional antenna itself, to effect a correction in the positioning thereof.

3,686,672
RADIO CONTROL SYSTEM FOR CAMERA
Shigeru Ishizuka, Yokohama-shi, Japan, assignor to Yokosho Company Ltd., Yokohama-shi, Japan
Filed Dec. 12, 1969, Ser. No. 884,457
Claims priority, application Japan, Dec. 19, 1968, 43/92637
Int. Cl. H04b 7/00
U.S. Cl. 343—225 **1 Claim**

The inventive radio system for controlling the operation of shutter of a camera comprises a transmitter for transmitting a signal of a radio frequency, a receiver for receiving said signal from said transmitter and an actuator circuit connected to an electro-magnetic plunger which in turn is mechanical coupled to a release member of the shutter assembly. The actuator circuit comprises an oscillator circuitry and a charging circuitry which are electrically connected to each other through a

transformer so that electrical energy is charged in the charging circuit to a predetermined level. The charging circuitry has a switching element at the output side thereof connected to the electro-magnetic plunger, which element is usually open and closed, only when there appears a signal at the output of said receiver, to thereby discharge the charged energy through said electrical plunger. The latter then actuates the release



member of the shutter assembly. As an additional inventive feature, the actuator circuit may comprise means for supplying a constant current to the electro-magnetic plunger after the latter has been actuated as above mentioned. This additional means comprises a diode connected to a power source of the oscillator circuitry and to the magnetic winding of the plunger by way of said switching element.

3,686,673

DIRECTIONAL-BEAM ANTENNA

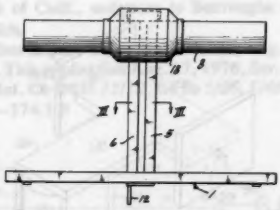
Friedrich Scheuerecker, Baldham, and Johann Schlagbauer, Munich, both of Germany, assignors to Rohde & Schwarz, Muenchen, Germany

Filed Dec. 2, 1970, Ser. No. 94,280

Claims priority, application Germany, Dec. 12, 1969, G 69 48 104.5

Int. Cl. H01q *19/10*

U.S. Cl. 343—807 **12 Claims**



A directional beam antenna employs a pair of elongate, parallel, U-shaped members having a dipole connected at one end and a reflector connected at the other end. The U-shaped members are spaced apart and have their edges (legs of a U) extending toward one another. The reflector may be constructed of at least two spaced apart and connected parallel elongate U-shaped members. The dipole includes a pair of dipole halves which abut and are connected to the first-mentioned U-shaped members at portions defining the bases of the respective U's. A coaxial cable extends directly through a channel defined by the base and legs of one of the U-shaped members which support the dipole and a connection member bridges the supporting U-shaped members for mechanical and electrical connection of the coaxial cable to the dipole halves.

3,686,674

MICROWAVE SPIRAL ANTENNA STRUCTURE

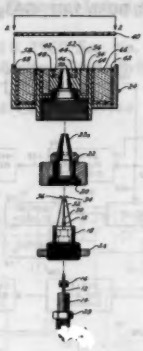
David N. Clasby, Newhall, and Roger D. Hall, Encino, both of Calif., assignors to The Bendix Corporation

Filed Jan. 4, 1971, Ser. No. 103,630

Int. Cl. H01q *1/36*

U.S. Cl. 343—895 **8 Claims**

A microwave antenna is described including a small diameter cylindrical aluminum housing which includes a plurality of concentric cavities tuned with resonant microwave material, the remaining volume of each being essentially filled with polyurethane foam material. A printed circuit spiral antenna structure overlies the cavities and is connected at its center through a microstrip balun to a coaxial conductor. A conical



insert forming part of the connector overlies the microstrip balun and provides mechanical support thereto, and also prevents radiation from the balun from interfering with the operation of the cavities.

ERRATUM

For Class 343—880 see:
Patent No. 3,686,688

3,686,675

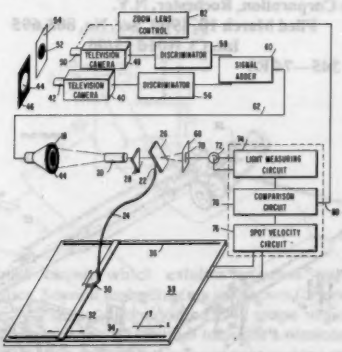
APPARATUS AND METHOD FOR DRAWING WITH A SPOT OF RADIANT ENERGY

Thomas L. Faul, Skaneateles, N.Y., and Richard G. Young, Fairfax, Va., assignors to Faul-Coradi, Inc.

Filed March 19, 1970, Ser. No. 21,218

Int. Cl. G03b *27/00*

U.S. Cl. 346—1 **9 Claims**



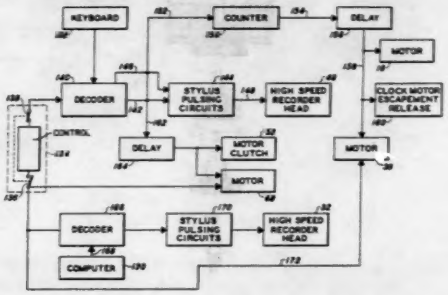
A line is traced on a photosensitive surface by a moving spot of light which has a uniform and constant intensity, and variable outside dimensions to change the width of a line produced thereby. Within the spot, there is a darkened area which changes in size according to the velocity of the spot over the photosensitive surface in order to expose the photosensitive surface uniformly along the length of the line. A cathode ray tube presents a picture which is projected on the photosensitive surface to create the spot of light.

3,686,676

DUAL MODE ELECTROGRAPHIC RECORDER

Richard S. Howell, and Robert V. Brunner, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1970, Ser. No. 85,054
Int. Cl. B05b 5/02; G03g 15/08
U.S. Cl. 346—74 ES 9 Claims



Dual mode electrographic recording apparatus comprising a slow speed input generated by a typewriter keyboard and a high speed input via a computer. The recording apparatus of the present invention is characterized by the provision of a developer structure having two modes of operation during one of which developer material is applied to the recording medium along a recording zone traversed by the slow speed recorder and zone occupied by a stationary high speed recording structure.

3,686,677

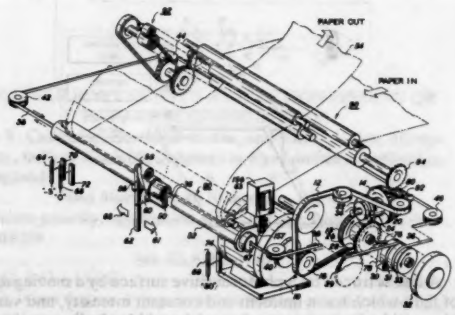
Patent Not Issued For This Number

3,686,678

DUAL MODE ELECTROSTATIC PRINTING

Neal R. Robbins, Webster; Howard Daniel Ring, Rochester; Gerard C. Wright, Penfield; Theodore M. Ceelen, Rochester, and Stuart E. Hotchkiss, Williamson, all of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed March 10, 1969, Ser. No. 805,695
Int. Cl. G01d 15/06
U.S. Cl. 345—74 ES 18 Claims



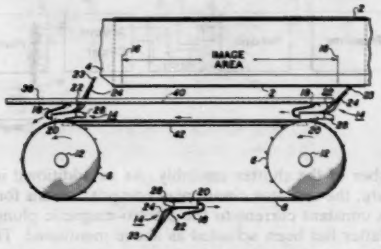
A dual operating mode electrostatic printer wherein input information from a remote apparatus is printed a line at a time at high speeds in a first operating mode and wherein information from a keyboard is printed a character at a time in a second low speed operating mode.

3,686,679

MULTI-STYLUS RECORDING ASSEMBLY

Klaus K. Stange, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 829,637, June 2, 1969. This application Oct. 29, 1970, Ser. No. 85,230
Int. Cl. G01d 15/06
U.S. Cl. 346—139 A 11 Claims



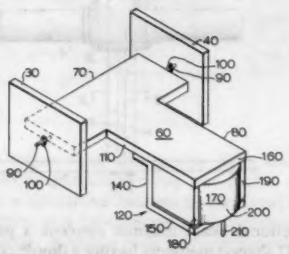
An alphanumeric recording assembly wherein a styli support body fixed to an endless drive belt is stabilized by counter forces exerted by spring brushes sliding against commutator bars facing parallel to the belt and a support plate behind the belt in the recording zone.

3,686,680

RECORDER AND PEN ASSEMBLY THEREFOR

Gennaro J. Bruzzano, 1225 Douglas Ave., North Brunswick, N.J.

Filed Oct. 27, 1970, Ser. No. 84,333
Int. Cl. G01d 15/16
U.S. Cl. 346—140 4 Claims



A recorder includes a pen-support portion and a pen-support arrangement which includes an arm removably securable to the pen-support portion, the arm including spring means adapted to removably carry a throw-away type ink pen.

3,686,681

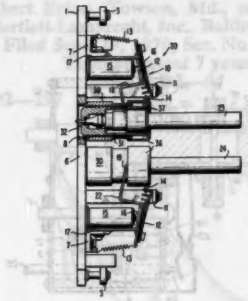
PEN ACTUATING MECHANISM FOR GRAPHICAL DISPLAY PLOTTER

Jerry A. Stegenga, Coral Gables, Fla., assignor to Milgo Corporation, Miami, Fla.

Filed April 20, 1970, Ser. No. 29,878
Int. Cl. G01d 15/24
U.S. Cl. 346—141 3 Claims

Graphical displays may be plotted on a vertical or horizontal bed requiring different pen pressures and may require the use of pens of several different types each requiring a different pressure for successful high resolution plotting. This invention provides for receiving pens of different kinds in an X–Y plotter which moves over the face of a bed according to electrical signals and applies pen pressure for marking, according to other signals, in which it is necessary to apply differing pressures in accordance with the pen type and the ink employed as

well as the orientation of the plotting bed. A holder is provided with a magnet and armature attached to a fork which lifts the pen from the writing surface when not in use by virtue of a hold-off spring. The resulting pressure of the pen point on



the surface is selectable according to whether the armature causes one or more of a number of writing springs to engage the pen holder for urging it toward the surface when the magnet is actuated.

3,686,682

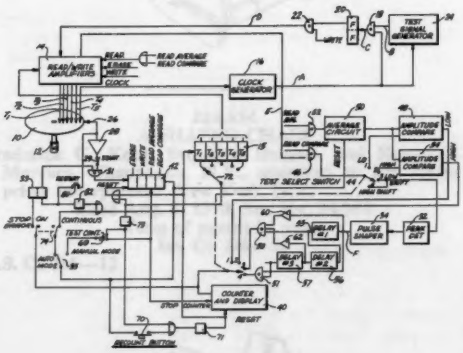
METHOD AND APPARATUS FOR TESTING MAGNETIC DISC FILES

Michael I. Behr, South Pasadena, and Allan E. Carr, Thousand Oaks, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 851,226, Aug. 19, 1969, abandoned. This application Aug. 17, 1970, Ser. No. 64,281

Int. Cl. G01r 33/12; G11b 5/06, 5/46

U.S. Cl. 340—174.1 B **15 Claims**



There is described a method and apparatus for testing magnetic disc files by recording pairs of flux transitions at intervals along the length of a decoding track on the magnetic disc, the transitions producing a pair of pulses at periodic intervals during playback. By measuring both the time interval between the peaks of each pair of pulses and measuring the peak amplitude relative to the average amplitude of the recorded pulses, the surface quality of the magnetic discs, as well as the quality and spacing of the magnetic head, is tested.

3,686,683

MASS SPECTROMETER ELECTRODE GAP CONTROL

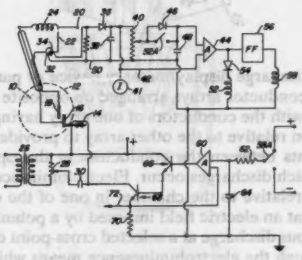
Patrick Powers; Reginald Graham, both of Cheshire, and Richard Albert Bingham, Manchester, all of England, assignors to Associated Electrical Industries Limited, London, England

Filed April 8, 1969, Ser. No. 18,361

Claims priority, application Great Britain, April 8, 1968, 16,742/68

Int. Cl. B01d 59/44

U.S. Cl. 315—357 **18 Claims**



In a spark discharge source for a mass spectrometer in which at least one of two electrodes is vibrated to vary the electrode gap across which the discharge takes place, means are provided for adjusting the mean spacing between the electrodes to provide optimum current flow between the electrodes.

3,686,684

SEMICONDUCTOR CIRCUITS

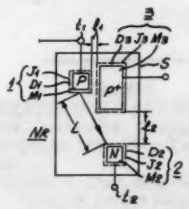
Takeshi Matsushita, Atsugi, and Hajime Yagi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,539

Claims priority, application Japan, May 28, 1969, 44/41576; May 28, 1969, 44/41577; May 28, 1969, 44/41578

Int. Cl. H01l 11/00, 15/00, 9/12

U.S. Cl. 317—235 R **26 Claims**



An electric circuit which exhibits negative impedance characteristics. Several embodiments are shown for producing "N" shape, "S" shape, and modified "N" shape negative impedance characteristics. The circuit includes a semiconductor device of the kind having three independent regions on a substrate, and a pair of bias sources; one source is applied between two of the regions, and the other is applied at least to the third region. By suitable bias arrangements the negative impedances are produced.

3,686,685

Patent Not Issued For This Number

3,686,686

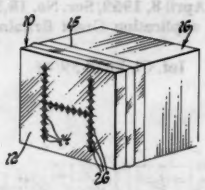
VISUAL DISPLAY AND MEMORY SYSTEM

Maclin S. Hall, 4539 Marlborough Rd., Okemos, Mich.

Filed Dec. 8, 1969, Ser. No. 882,816

Int. Cl. G08b 5/36

U.S. Cl. 340—324 R **29 Claims**



A gas discharge display/memory device or panel comprises a pair of conductor arrays arranged on opposite sides of a gas chamber with the conductors of one array having a transverse orientation relative to the other array to provide a plurality of cross-points between the conductors in the opposite arrays across which discharges occur. Electroluminescence means is arranged relative to the chamber in one of the conductor arrays so that an electric field imposed by a potential generated by a gaseous discharge at a selected cross-point causes current flow through the electroluminesence means which thereupon emits light at the selected cross-point. Any desired color of light can be obtained by using different electroluminescent materials.

3,686,687

DOUBLE-ACTING HYDRAULIC PUMP

Melchor Julio Chavarria, and Osvaldo Risso, both of Hipolito Irigoyen 615, Buenos Aires, Argentina

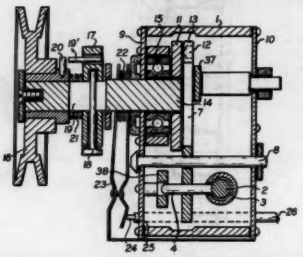
Filed Sept. 10, 1970, Ser. No. 71,156

Claims priority, application Argentina, Jan. 30, 1970, 226715

Int. Cl. F04b 49/00

U.S. Cl. 417—223 **2 Claims**

A hydraulic double-acting pump of the piston type connected by conduits to a source of supply of liquid and a consuming source, comprising a double-acting piston displaceably housed in a cylinder to which the liquid has access from the source of supply and the ends of which communicate with the consuming source, an actuating means for the piston comprising a double-forked oscillating level in one of the forks of which displaceably houses a rod rigidly connected with the piston emerging from the cylinder through a longitudinal groove therein while the other fork houses displaceably a rod of a crank rigidly connected with a rotary shaft, connected with a driving pulley via clutch means, and automatically actuated by pressure of the liquid pumped and by an opposing spring, the pulley operatively connected to a drive motor.



3,686,688

Patent Not Issued For This Number

DESIGNS

AUGUST 22, 1972

224,632
WOMAN'S SHOE
Wiley Robert Ecton, Towson, Md., assignor to Dixon-Bartlett-Lambrecht, Inc., Baltimore, Md.
Filed Sept. 29, 1970, Ser. No. 25,262
Term of patent 7 years
Int. Cl. D2—*04*
U.S. Cl. D2—297

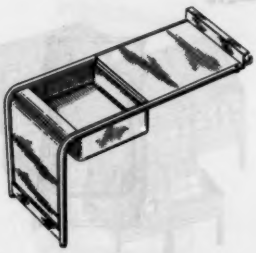
224,633
CHAIR
Frederick G. Kohl, Brooklyn Heights, and Robert K. Marceca, Chappaqua, N.Y., assignors to Rio Enterprises Incorporated, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 24,353
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12

224,634
A-SHAPED CHAIR
Frederick G. Kohl, Brooklyn Heights, and Robert K. Marceca, Chappaqua, N.Y., assignors to Rio Enterprises Incorporated, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 24,354
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—12

224,635
CHAIR
Arthur F. Yuenger, P.O. Box 2656, Aspen, Colo. 81611
Filed Aug. 28, 1970, Ser. No. 25,212
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—56

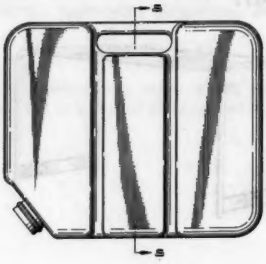
224,636
TABLE
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Oct. 7, 1970, Ser. No. 25,422
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

224,637
SIDE EXTENSION UNIT FOR A DESK
Douglas C. Ball, Senneville, Quebec, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada
Filed Oct. 7, 1970, Ser. No. 25,371
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—199



224,638
BOTTLE
Howard Cooper, 175 E. Delaware, Suite 7707, Chicago, Ill. 60611
Filed Nov. 12, 1971, Ser. No. 198,494
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23

224,639
LIQUID CONTAINER
Warren J. Schieser, Columbus, and Jere C. Marsh, Worthington, Ohio, assignors to The Corrugated Container Company, Columbus, Ohio
Filed May 7, 1971, Ser. No. 141,454
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175



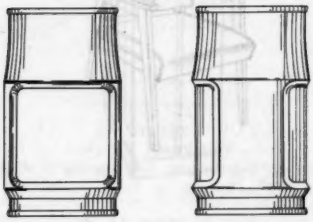
224,640
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,283
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

224,641
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,284
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

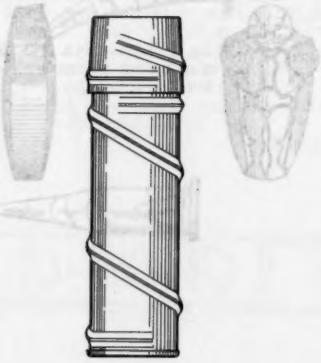
224,642
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,299
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

224,643
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,300
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

224,644
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,829
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

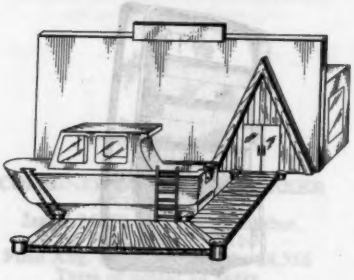


224,645
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 153,134
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



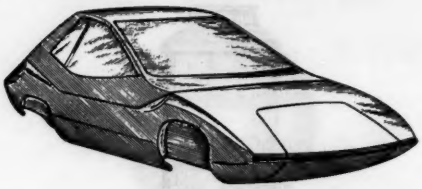
224,646
CONTAINER FOR BEVERAGES OR THE LIKE
Verner Vollquartz, Pontiac, Mich., assignor to Ex-Cell-O Corporation, Detroit, Mich.
Filed June 4, 1971, Ser. No. 150,268
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—218

244,647
BUILDING BLOCK
Stanton L. Friedman, 11535 Renwick, Houston, Tex. 77035
Filed Mar. 19, 1970, Ser. No. 21,977
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

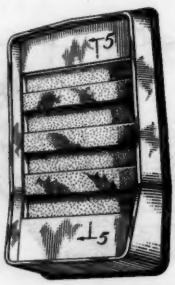


244,648
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, New York, N.Y. (280 Vanderbilt Ave., Brooklyn, N.Y. 11205)
Filed May 26, 1971, Ser. No. 147,303
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

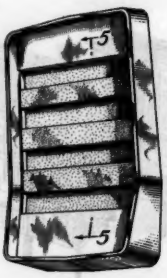
244,649
AUTOMOBILE BODY
Robert S. McKee, 411 W. Colfax St., Palatine, Ill. 60067, and Michael D. Williams, Roselle, Ill.; said Williams assignor to said McKee
Filed Nov. 16, 1970, Ser. No. 26,013
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



224,650
COMBINED GRILLE AND PERIPHERAL GASKET FOR A TRACTOR
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 6, 1970, Ser. No. 24,348
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—18



244,651
GRILLE FOR A TRACTOR
Leo J. Lorenz, Farmington, and Wilford E. Bean, Southfield, Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 6, 1970, Ser. No. 24,350
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—18



224,652
CHAIR
Harry Zellick, 86 Hyde Ave. 02158, and Louis H. Zellick, 106 Withington Road 02160, both of Newton, Mass., and Phillip Zellick, Boston, Mass. (47 Nottinghill Road, Brighton, Mass. 02135)
Filed Mar. 4, 1971, Ser. No. 121,226
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D15—1

224,653
VITAMIN TABLETS OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,874
Term of patent 14 years
Int. Cl. D1—*01;* D28—*01*
U.S. Cl. D16—3

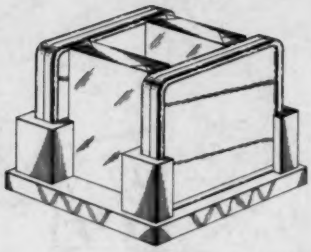
224,654
WATER CONDITIONER
Donald S. Campbell, St. Paul, Minn., assignor to Ecodyne Corporation
Filed Mar. 24, 1971, Ser. No. 127,478
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

224,655
NOZZLE TIP FOR A DENTAL INSTRUMENT
William B. Dragan, R.F.D. Burr St., Fairfield, Conn. 06430
Filed Oct. 1, 1970, Ser. No. 25,298
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1

224,656
TAPE DRIVE OR SIMILAR ARTICLE
Albert J. Michaud, Jr., Marlboro, and John F. Graham, Sudbury, Mass., assignors to Honeywell, Inc., Minneapolis, Minn.
Filed Sept. 8, 1970, Ser. No. 24,888
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

224,657
COMBINED GOLF BALL MARKER AND HOLDER
Janice M. Fisher, 1585 Chamber, St. Paul, Minn. 55106
Filed Aug. 28, 1970, Ser. No. 24,756
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

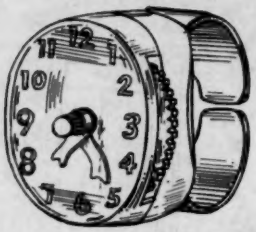
224,658
COMBINED COASTER SET, PLAYING CARD DECKS AND HOLDER THEREFOR
Richard H. Cole, Bloomington, and Erwin A. Frand, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed July 30, 1970, Ser. No. 24,228
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—13



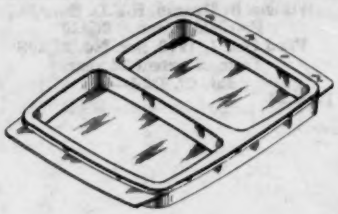
224,659
OPERABLE STAND FOR A MODEL AIRPLANE OR THE LIKE
Denis V. Bosley, Palos Verdes, Peninsula, and Larry R. Wood, Lawndale, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 18, 1971, Ser. No. 107,610
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

224,660
TOY MODEL AIRPLANE
David William Posner, Livingston, N.J., assignor to Childhood Promotions, Inc., Livingston, N.J.
Filed Jan. 26, 1971, Ser. No. 109,992
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

224,661
HOUSING FOR A TOY MUSIC BOX
Ernest L. Thornell, Horicon, Wis., assignor to Marlin Toy Products, Inc., Horicon, Wis.
Filed Mar. 1, 1971, Ser. No. 119,990
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

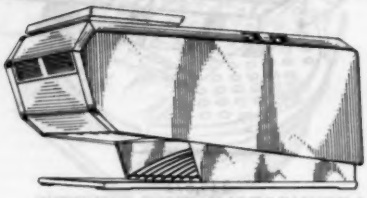


224,662
SERVING TRAY
James B. Swett, Barrington, and Harold P. Ashton, Providence, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 24, 1970, Ser. No. 24,670
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



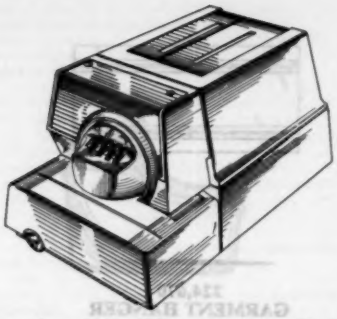
224,663
LEVEL
Maarten C. de Jong, Canton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed June 1, 1971, Ser. No. 149,106
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6

224,664
COPYING MACHINE
Georges Louis Joseph Peynet, 59 Rue Lamarck, Paris 18, France
Filed Sept. 1, 1970, Ser. No. 24,794
Claims priority, application France Mar. 19, 1970
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

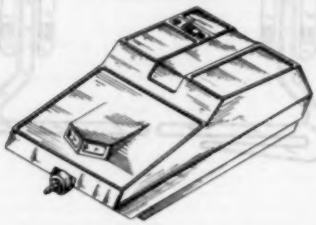


224,665
PHOTOCOPY MACHINE
Lionel B. Hoffman, Wyckoff, N.J., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Apr. 1, 1971, Ser. No. 130,556
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

224,666
POSTAGE METER
Robert E. Schmeck, Old Greenwich, and Einar W. Tangard, Norwalk, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 19, 1971, Ser. No. 107,875
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11



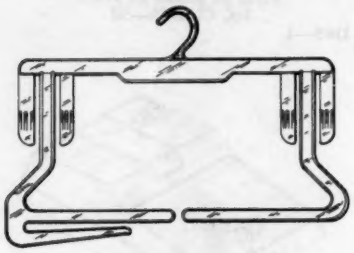
224,667
AIR-PUMP FOR AQUARIUM
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Aug. 21, 1970, Ser. No. 24,626
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D65—1



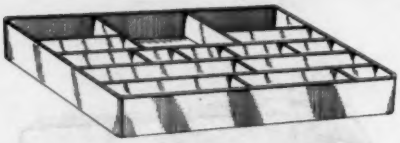
224,668
DECK PLUG
Francis J. Burger III, Kirkland, Robert L. Stevenson, Mercer Island, and Benjamin J. Lehman, Seattle, Wash., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 20, 1970, Ser. No. 26,242
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1

224,669
LETTER HOLDER
Marion K. Summers, W. Commerce St., Brownstown, Ind. 47220
Filed June 22, 1970, Ser. No. 23,616
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—9

224,670
GARMENT HANGER
Robert L. Hart, Manhasset Hills, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Mar. 4, 1971, Ser. No. 121,223
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D80—8

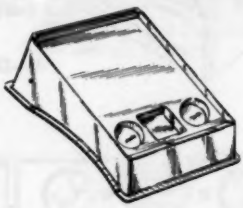


224,671
SURGICAL TRAY
Robert E. Eddy, 814 W. Jackson, Knoxville, Iowa 50138
Filed July 23, 1970, Ser. No. 24,074
Term of patent 3½ years
Int. Cl. D24—*04*; D24—*99*
U.S. Cl. D83—1

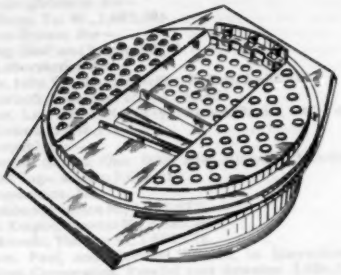


224,672
MYRINGOTOMY TUBE INSERTER
James L. Geraci, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Nov. 2, 1971, Ser. No. 195,065
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12

224,673
SERVING TRAY FOR AUTOMOBILE SEATS
Riley H. Brooks, 1522 1st St., Webster City, Iowa 50595
Filed July 28, 1970, Ser. No. 24,187
Term of patent 14 years
Int. Cl. D7—*07*; D12—*16*
U.S. Cl. D87—1



224,674
COMBINED FOOD GRATER AND BOWL
Harold P. Ashton, Providence, and James B. Swett, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 30, 1970, Ser. No. 26,704
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



224,675
COMBINED SADDLEBAG AND BACKREST FOR A MOTORCYCLE OR THE LIKE
Verlin A. Hearn, 5662 Auburn Blvd., Sacramento, Calif. 95691
Filed Dec. 18, 1970, Ser. No. 26,563
Term of patent 14 years
Int. Cl. D12—*16*
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22D DAY OF AUGUST, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A F A Corporation, The: *See—*
Vanier, Vance R., 3,685,739.

A-T-O Inc.: *See—*
Zimmerman, Arthur W., 3,685,586.

A/S Kiaettingfabriken: *See—*
Spilhaug, Tor W., 3,685,285.

AB Gitson-System: *See—*
Kring, Olof; and Yngve, Stig G. J., 3,685,904.

Abbott Laboratories: *See—*
Cole, John Wayne; and Hallas, Robert, 3,686,187.
Plotnikoff, Nicholas Peter, 3,686,409.
Swett, Leo Ralph; Ratajczyk, James Daniel; and Young, Patrick Richard, 3,686,171.

Abe, Hiroyuki: *See—*
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, 3,686,350.

Abex Corporation: *See—*
Bradshaw, Clayton H., 3,685,623.
Mac Keigan, Thomas H., 3,685,160.
Ratkowski, Thomas A., 3,685,178.

Abramson, Paul; and Goertzel, Gerald, to International Business Machines Corporation. Parallel tone detector. 3,686,576, Cl. 328-134.000.

ACF Industries, Incorporated: *See—*
Grover, George M.; and Coyle, Edward L., 3,686,040.

Adaev, Evgeny Ivanovich; Blinov, Alexander Vasilievich; Kamaria, Georgy Mikirtychevich; Alexandrovich, Novoslelov Viktor; and Yakimenko, Leonid Markovich. Templet hat method for assembling cathode caps electrolyzer for molten salts. 3,685,121, Cl. 29-203.0j.

Adam, Macedon Emil: *See—*
Szumilas, Wladislaw; Adam, Macedon Emil; Lata, Ilie; and Muresan, Gheorghe, 3,685,793.

Adamovske Strojirny, narodni podnik: *See—*
Muselik, Miloslav, 3,685,445.

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Addressograph-Multigraph Corporation: *See—*
Deutsch, Fritz A., 3,685,819.
Lux, George K.; Ellis, James B.; and Schulze, John J., 3,685,894.
Raterman, Donald E., 3,685,906.

Adelberg, Marvin. Apparatus for regulating fluid flow through plastic tubing. 3,685,787, Cl. 251-6.000.

Admiral Corporation, mesne: *See—*
Chamberlain, Richard Travers, 3,686,575.

Adolphson, Carl: *See—*
Markham, Aaron E.; and Adolphson, Carl, 3,686,119.

Aebersold, Rene; and Lehmann, Werner, to Polytype AG. Automatic cup printing machine. 3,685,441, Cl. 101-38.00a.

Aero Chem Research Laboratories, Inc.: *See—*
Calcote, Hartwell Forrest, 3,685,810.

AESCULAP-WERKE A.G. vormals Jetter & Scheerer: *See—*
Beuerle, Harbert; and Haberlen, Roland, 3,685,518.

Afanasiev, Mikhail Andreevich: *See—*
Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Afanasiev, Mikhail Andreevich, 3,685,435.

Agence Nationale de Valorisation de la Recherche tour Aurore: *See—*
Gerard, Paul, 3,685,874.

Ahlgren, Nils Harald; and Jahr, Odd. Jack assemblies. 3,685,801, Cl. 254-105.000.

Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., to Gulf Research & Development Company. Esterification of organic halides with reduced ether production. 3,686,285, Cl. 260-493.000.

Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., to Gulf Research & Development Company. Esterification of organic halides with reduced olefin production. 3,686,286, Cl. 260-493.000.

Aiki, Shigeo: *See—*
Kobashi, Uichiro; Aiki, Shigeo; and Hirai, Akiyoshi, 3,685,289.

Ainsworth, Wm., Inc.: *See—*
Smith, James E.; and Borgogno, Victor F., 3,685,604.

Air Logistics Corporation: *See—*
Schirtzinger, Joseph F., 3,686,048.

Air Monitor Corporation: *See—*
De Baun, Kenneth W., 3,685,355.

Air Products and Chemicals, Inc.: *See—*
Holland, Dewey G.; and Polevy, John H., 3,686,288.

Air Reduction Company, Inc.: *See—*
Shepherd, Thomas L., 3,685,740.

Aisin Seiki Company Limited: *See—*
Inada, Masmi; and Hayashi, Tatsuo, 3,685,867.

Aitkenhead, William C.: *See—*
Grunig, James K.; Davis, William B.; and Aitkenhead, William C., 3,685,961.

Ajax Magnethermic Corporation: *See—*
Havas, George; and Dewan, Shashi Bhushan, 3,686,558.

Akai Electric Company, Limited: *See—*
Sato, Fujio; and Homma, Ko, 3,686,466.

Akiyama, Hideaki: *See—*
Kakiuchi, Tokusaburo; Ando, Akira; Akiyama, Hideaki; and Jinsenji, Sei, 3,685,767.

Akroyd, Philip: *See—*
Van Dorp, David Adriaan; Akroyd, Philip; and Mindt, Lothar, 3,686,003.

Aktiebolaget Bofors: *See—*
Erhard, Rune Torsten Isidor, 3,685,159.

Aktiebologet Electrolux: *See—*
Bengt Erik Orr, 3,685,797.

Aktiengesellschaft Brown, Boveri & Cie: *See—*
Floessel, Carl-Dieter, 3,686,453.
Rudolph, Rene; and Tan, Tjhing Thian, 3,686,532.

Aktiengesellschaft fur Biologische Verfahrenstechnik: *See—*
Baerfuss, Achilles, 3,686,073.

Alazraki, Marcos: *See—*
Gapp, Roland Howard; Alazraki, Marcos; and Harper, John, 3,685,391.

Albanese, Pietro; Benzoni, Luigi; Corain, Benedetto; and Turco, Aldo, to Montecatini Edison S.p.A. Process for preparing predominantly linear pentene nitriles. 3,686,264, Cl. 260-465.300.

Albee, Thomas K., to Bunker-Ramo Corporation, The. Double mitered compensated waveguide bend. 3,686,596, Cl. 333-98.0be.

Aldrich, Paul H.; Bartell, Don G.; and Espy, Herbert H., to Hercules Incorporated. Aqueous formualtion of water soluble cationic or anionic vinyl addition polymers withwater soluble condensation polyamides. 3,686,109, Cl. 260-29.6nr.

Alexander, Alexander W. Sensor responsive to liquid level. 3,685,357, Cl. 73-313.000.

Alexandrovich, Novoslelov Viktor: *See—*
Adaev, Evgeny Ivanovich; Blinov, Alexander Vasilievich; Kamaria, Georgy Mikirtychevich; Alexandrovich, Novoslelov Viktor; and Yakimenko, Leonid Markovich, 3,685,121.

All-O-Matic Manufacturing Corporation: *See—*
Karel, George M., 3,685,861.

All-Power Manufacturing Co.: *See—*
Brown, Gordon R., 3,685,785.

Allegheny Ludlum Steel Corporation: *See—*
Zaremski, Donald R.; Beigay, Jack M.; and Heavner, William D., Jr., 3,685,136.

Allen, George Rodger: *See—*
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,686,213.

Allen, John W.: *See—*
Sanders, Wes E.; and Allen, John W., 3,685,093.

Allen, Kenneth M.; and Harper, Chester H. Pulsing conveyors. 3,685,703, Cl. 222-373.000.

Alliance Manufacturing Company, Inc., The: *See—*
Deming, Andrew F., 3,685,142.

Allied Chemical Corporation: *See—*
Barton, Oliver A.; and Murphy, Kevin P., 3,686,130.
Culkowski, Edwin M.; Gore, Donald B.; and Kassay, Andrew W., 3,686,105.
Fischer, Harry C., 3,685,310.
Murray, Edward J.; and Winstrom, Leon O., 3,686,318.

Aluminum Company of America: *See—*
Urbanic, John M., 3,686,465.

Alvarez, Francisco Godia. Treatment and exercise apparatus applying tension to the backbone of a user and body massage. 3,685,511, Cl. 128-57.000.

Amaki, Masami: *See—*
Kawai, Hitasi; and Amaki, Masami, 3,686,583.

American Allsafe Company, Inc.: *See—*
Militello, James V., 3,685,055.

American Cyanamid Company: *See—*
Gordon, John Edson; and Feldman, Martin Louis, 3,686,233.
Miller, Phillip; and Montgomery, Carroll Sherman, 3,686,203.

Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,686,213.

American Home Products Corporation: *See—*
Bell, Stanley C.; and Wei, Peter H. L., 3,686,210.
Buzby, George C., Jr.; Walk, Charles R.; and Smith, Herchel, 3,686,317.

American Tatra Inc.: *See—*
Macpherson, Roger, 3,685,161.

Ametek, Inc.: *See—*
Raznov, Jerry L., 3,685,360.

AMF Incorporated: *See—*
Schuran, Fred A., 3,685,366.

Amiard, Gaston; Nomine, Gerard; and Torelli, Vesperto, to Roussel-UCLAF. Substituted hydroindanyl alkanoic acids. 3,686,241, Cl. 260-410.500.

Amos, Charles William; Johnson, Maynard Dale; and Dieckmann, John Jacob, to Dunham-Bush, Inc. Apparatus for helically corrugating flexible tubular metal foil ducts. 3,685,329, Cl. 72-129.000.

Ampex Corporation: *See—*
Clark, Harold V.; and Engbretson, Gerald C., 3,686,469.

Amtsberg, Lester A.; Bilodeau, Paul J.; and Judd, Sebastian F., to Chicago Pneumatic Tool Company. Fluid operated rock drill having an independent rotation motor. 3,685,593, Cl. 173-14.000.

Anaconda Company, The: *See—*
Grunig, James K.; Davis, William B.; and Aitkenhead, William C., 3,685,961.

Anchor Hocking Corporation: *See—*
Brady, Dale J., 3,685,632.

Anders, Dietmar, to Berstorff, Herrmann Maschemenbau GmbH. Apparatus for granulating thermoplastic materials. 3,685,751, Cl. 241-256.000.

Andersen, Stanley R.; and Kinkade, Robert G., to Cogar Corporation. Variable organization memory system. 3,686,640, Cl. 340-172.500.

Anderson, Douglas West: *See—*
Heskftt, Don Edward; Hoover, Frank Kryder; Burkhalter, Robert, Jr.; and Anderson, Douglas West, 3,685,659.

Andersson, Dag Martin: *See—*
Blixt, S. Stefan; and Andersson, Dag Martin, 3,686,662.

Ando, Akira: *See—*
Kakiuchi, Tokusaburo; Ando, Akira; Akiyama, Hideaki; and Jinsenji, Sei, 3,685,767.

Andre, Byron: *See—*
Grante, Ralph; and Andre, Byron, 3,685,151.

Andreae & Mayer GmbH: *See—*
Borner, Helmut; and Herz, Robert, 3,685,689.

Anelli, Pietro: *See—*
Lombardi, Aurelio; Anelli, Pietro; and Bianchi, Gianfranco, 3,686,428.

Anger, Ernest G.; Richards, Giles J.; Bloodgood, John F.; and Geiger, Roy J., to Square D Company. Positioning control system for a machine that work on a moving parting. 3,686,556, Cl. 318-595.000.

Anotalt fur Potentdienot: *See—*
Fleissner, Heinz; and Fleissner, Gerold, 3,685,322.

Applied Research Laboratories, Inc.: *See—*
Dahlquist, Ralph L.; and Jones, James L., 3,685,911.

Aqua-Chem, Inc.: *See—*
Turecek, Joseph L.; Craig, Glenn D.; and Fueling, David T., 3,685,364.

Arad, Yael; Levy, Moshe; and Vofsi, David, to UCB (Union Chimique-Chemische Bedrijven), S.A. Process for the hydrodimerization of acrylic acid derivatives. 3,686,269, Cl. 260-465.80a.

Arad, Yael; Levy, Moshe; and Vofsi, David, to UCB (Union Chimique-Chemische Bedrijven) S.A. Process for the hydrodimerization of acrylic acid derivatives. 3,686,270, Cl. 260-465.80a.

Arav, Ronnie A.; and Trentini, Gianpietro, to Beloit Corporation. Multifilament extrusion method and apparatus. 3,686,386, Cl. 264-176.00z.

Arave, Clairmont D. Momentary impulse control. 3,686,508, Cl. 307-139.000.

Arcamone, Federico; Cassinelli, Giuseppe; Penco, Sergio; and Tognoli, Luigi, to Societa Farmaceutici Italia. Dihydrodaunomycin antibiotics and derivatives thereof. 3,686,163, Cl. 260-210.0ab.

Arkenberg, Karl-Heinz. Drafting set for drawing a body in parallel perspective. 3,685,156, Cl. 33-77.000.

Armbrust, Herbert: *See—*
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, 3,686,339.

Armco Steel Corporation: *See—*
Cordrey, Richard N., 3,685,288.

Armitage, Bernard John: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,686,218.

Armour and Company: *See—*
Taber, David; and Zakaria, Moneeb H., 3,686,418.

Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, to Asta-Werke Aktiengesellschaft, Chemische Fabrik. Basic α-nortricyclyl-(3)-benzyl ether, and the salts thereof. 3,686,311, Cl. 260-570.600.

Arthur, Wilfred J.: *See—*
Knowles, Richard N.; and Arthur, Wilfred J., 3,686,415.

Artle, Robert E., Jr.; and Romero, Frank. Detachable cleats. 3,685,174, Cl. 36-7.600.

Artos Dr. Ing. Meier-Windhorst Kommanditgesellschaft: *See—*
Meier-Windhorst, Christian August, 3,685,954.

Artz, Klaus, to Ciba-Geigy AG. Mono azo dyestuffs containing a benzthiazolyl radical. 3,686,162, Cl. 260-158.000.

Asahi Kasei Kogyo Kaisha: *See—*
Inoue, Goro; and Fukumi, Hirokazu, 3,686,260.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Moriyama, Itsuki, 3,685,418.

Asahi Kogyo Kabushiki Kaisha: *See—*
Ohfuka, Toshio; Sato, Hideo; and Uchida, Yasuo, 3,686,019.

Asberg, Sture; and Timmer, Jacobus Maria. Castor assembly. 3,685,090, Cl. 16-20.000.

Ashiya, Ryosuke: *See—*
Naruse, Yohsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,686,525.

Ashland Oil & Refining Company: *See—*
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,686,340.

Ashworth, James E., to United States Steel Corporation. Connection between a brace rail and fence post. 3,685,802, Cl. 256-35.000.

Associated Electrical Industries Limited: *See—*
Powers Patrick; Graham, Reginald; and Bingham, Richard Albert, 3,686,683.

Asta-Werke Aktiengesellschaft, Chemische Fabrik: *See—*
Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, 3,686,311.

Atlas Chemical Industries, Inc.: *See—*
Hartmann, Ludwig A., 3,686,249.

Atwater, Wayne G., to Triox Company, The. Knockdown storage frame and components. 3,685,665, Cl. 211-177.

Atwood, Allen W.: *See—*
Taylor, Norman J.; Mann, Joseph K.; and Atwood, Allen W., 3,686,501.

Audio Devices, Inc.: *See—*
Sy, Jose C., 3,685,646.

Auer, Peter, to Uhlmann, Josef, Maschinenfabrik. Apparatus for thermoforming packages or heat-sealing thermoformed packages. 3,686,059, Cl. 156-581.000.

Ausnit, Steven. Flexible pilfer proof closure construction for bags. 3,685,562, Cl. 150-3.000.

Austin, Glenn M.: *See—*
Seiferth, Oscar E.; Austin, Glenn M.; and Gifford, Maurice J., 3,685,717.

Authie, Gerard: *See—*
Falvert, Daniel; Giralt, Georges; Clot, Jean; and Authie, Gerard, 3,686,492.

Automated Building Components, Inc.: *See—*
Jureit, John Calvin; Csakvary, Oscar; and Castillo, Adolfo, 3,685,129.

Automated Lawn Builders of the Midwest, Inc.: *See—*
Paige, Dennis D.; and Coleman, Lewis E., 3,685,468.

Autotrol Corporation: *See—*
Henning, Donald S., 3,685,792.
Henning, Donald S., 3,685,794.

Avitzur, Betzalel. Shaping of hollow workpieces. 3,685,337, Cl. 72-347.000.

Ayers, Maurice Donald, to Metal Innovations, Inc. Method and means for converting metal powders to continuous strip form. 3,686,376, Cl. 264-40.000.

Ayukawa, Yaichi: *See—*
Tamura, Masabi; Yoda, Masayuki; Shinya, Seishi; and Ayukawa, Yaichi, 3,686,144.

Babbs, Frederick William, to Cox of Watford Limited. Slide for a vehicle seat. 3,685,872, Cl. 308-6.00r.

Babich, Herman B. Securing devices to be used with aircraft. 3,685,771, Cl. 244-115.000.

Bacha, John D.; and Selwitz, Charles M., to Gulf Research & Development Company. Selective extraction of diahinotoluene from an ammonolysis product mixture. 3,686,314, Cl. 260-582.000.

Badcock, Frank Robert: *See—*
Steigman, Peter Edward; Badcock, Frank Robert; and Lamb, David Robert, 3,686,544.

Bader, Erich: *See—*
Haschke, Heinz; and Bader, Erich, 3,686,145.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Brunner, Erwin; Platz, Rolf; Taglieber, Kurt; and Weinfurter, Kurt, 3,686,344.
Hock, Karl Ludwig; and Pommer, Ernst-Heinrich, 3,686,256.
Merger, Franz, 3,686,304.
Mueller, Herbert; and Overwien, Hermann, 3,686,321.
Poehler, Guenter; Suter, Hubert; Wirth, Friedrich; and Walter, Johann Heinrich, 3,686,229.
Sanne, Walter; Koenig, Karl-Heinz; Pommer, Ernst-Heinrich; and Stummeyer, Herbert, 3,686,399.
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, 3,686,339.
Schindler, Robert; Schmidts, Kurt; and Wiegel, Wolfgang, 3,685,684.

Baer, John S.; and Weatherby, John H., to Precision Specialties, Inc. Compressor clutch. 3,685,622, Cl. 192-35.000.

Baerfuss, Achilles, to Aktiengesellschaft fur Biologische Verfahrenstechnik. Fermentor. 3,686,073, Cl. 195-139.000.

Bailey, Denis M., to Sterling Drug, Inc. 3,4-Dihydro-2(1H)-isoquinolinecarboxamidoximes. 3,686,184, Cl. 260-288.00r.

Bailey, William B., to Spencer Turbine Company, The. Flow-actuated bleed valve. 3,685,530, Cl. 137-98.000.

Bajer Industries Incorporated: *See—*
Lang, Marshall Ira, 3,685,235.

Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, to Rockwell Manufacturing Company. Valve assemblies. 3,685,536, Cl. 137-338.000.

Baker, Wallace L. Cow controller. 3,685,492, Cl. 119-27.000.

Baldwin, D. H., Company: *See—*
Dietrich, Walter E., 3,685,876.

Baldwin, J. A., Manufacturing Company: *See—*
Baldwin, Jesse A., 3,685,658.

Baldwin, Jesse A., to Baldwin, J. A., Manufacturing Company. Liquid filters. 3,685,658, Cl. 210-440.000.

Ball, Frank C.; and Knapp, Willard E., to Hydro-Test, Inc. High pressure packing cup. 3,685,544, Cl. 138-90.000.

Ball Sphere Hinge Syndicate: *See—*
Goossev, Constantin, 3,685,094.

Ballad, Erik Rikhardovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Balthis, Joseph H., Jr., to Du Pont de Nemours, E. I., and Company. Metal phosphate coated ferromagnetic chromium oxide and its preparation. 3,686,031, Cl. 117-234.000.

Bamat, Joseph. Digital watch. 3,685,283, Cl. 58-126.00a.

Bancroft, Joseph & Sons Co.: *See—*
Torello-Viera, Eugene, 3,685,109.

Banfield, Joseph Henry; Husni, Saleem Ynes; and Greig, William John, to RCA Corporation. Method of fabrication of semiconductor devices. 3,686,080, Cl. 204-15.000.

Banks, Neill K., Jr., to Bomco Incorporated. Process for producing cup-shaped thin-walled metal wares. 3,685,475, Cl. 113-120.00h.

Bannister, Brian Charles, to Haley, Mazler, (Manufacturing) Limited. Display means. 3,685,185, Cl. 40-125.00f.

Bansal, Suresh A.: *See—*
Pfrommer, Fritz; and Bansal, Suresh A., 3,685,630.

Barabas, Eugene S.; and Fein, Marvin M., to GAF Corporation. Functional terpolymers of N-vinyl lactams. 3,686,150, Cl. 260-78.50r.

Barber Colman Company: *See—*
Wiley, William H.; and Johnson, Franklin W., 3,686,485.

Barcza, Sandor. Substituted steroids. 3,686,236, Cl. 260-397.500.

Barden Corporation, The: *See—*
Gould, Robert J., 3,685,877.

Barlow, Gordon A., to Glass, Marvin, & Associates. Ball launching game having common target apertures. 3,685,829, Cl. 273-101.000.

Barnaby, Bernard Sydney; Webb, Graham; and Stevenson, Robert Andrew. Timing signal generators. 3,686,445, Cl. 179-84.00r.

Barnes, Thomas R.: *See—*
Karecki, Marion R.; Chastain George R.; and Barnes, Thomas R., 3,685,690.

Barnett, Kenneth W.: *See—*
Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, 3,686,159.

Barrere, Clem A., Jr. Adsorption process for recovering desired components from a gas stream. 3,685,256, Cl. 55-62.000.

Barrett, John Eric: *See—*
Jackson, Brian; and Barrett, John Eric, 3,686,588.

Barrett, Orvis G. Method and apparatus for releasing game birds as targets. 3,685,491, Cl. 119-15.600.

Barski, Jakier. Securement device. 3,686,613, Cl. 339-21.00r.

Bartell, Don G.: *See—*
Aldrich, Paul H.; Bartell, Don G.; and Espy, Herbert H., 3,686,109.

Bartley, Erle E.: *See—*
Meyer, Ronel M.; and Bartley, Erle E., 3,686,416.

Bartling, Gerhard, to SKF Kugellagerfabriken GmbH. System of spinning yarn. 3,685,270, Cl. 54-58.950.

Barton, Oliver A.; and Murphy, Kevin P., to Allied Chemical Corporation. Ternary azeotropic compositions. 3,686,130, Cl. 252-171.000.

Bassett, Arthur T., Jr., to General Motors Corporation. Evaporator-blower package. 3,685,311, Cl. 62-244.000.

B.A.T. Cigaratten-Fabriken GmbH: *See—*
Walther, Hans - J.; and Liepelt, Klaus - J., 3,685,650.

Bateman, Charles Donald; and Noland, Lyle J., to United Control Corporation. Aircraft instrument. 3,686,626, Cl. 340-27.0na.

Bates, Fred R., to Pacific Grinding Wheel Company, Inc. Reinforced grinding wheel. 3,685,215, Cl. 51-206.0nf.

Battelle Development Corporation, The, mesne: *See—*
Tenckhoff, Heinrich A. M.; and Shilipetar, George, 3,685,680.

Battelle Memorial Institute: *See—*
Hed, Aharon Zeev; and Freud, Paul J., 3,686,096.

Batzer Hans: *See—*
Habermeier, Juergen; Batzer Hans; Porret, Daniel; Peter, Heinrich; and Fechtig, Bruno, 3,686,174.

Bauer Bros, Co., The: *See—*
Horstman, Anton J., 3,685,747.

Bauer, James J., to Clark Equipment Company. Variable speed piston-swivel combination. 3,685,365, Cl. 74-230.17f.

Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, to Shell Oil Company. Ethylene polymerization. 3,686,159, Cl. 260-94.90c.

Baumann, Kurt, to Krups, Robert, Solingen-Wald, Firma. Dry shaving device. 3,685,149, Cl. 30-43.920.

Baxter Laboratories, Inc.: *See—*
Bellamy, David, Jr., 3,685,513.
Caster, Glenn, 3,685,795.
Creely, Joseph W., 3,686,120.

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Bearden, Roby, Jr.; and De Feo, Richard J., Jr., to Esso Research and Engineering Company. Paraxylene recovery with zeolite adsorbent. 3,686,343, Cl. 260-674.0sa.

Beasley, Donald L., to Townsend Engineering Company. Skinning and slashing machine. 3,685,561, Cl. 146-130.000.

Beck, Erich; and Schulz, Heinrich. Method and device for converting thermoplastic foil waste to a flowable granular material. 3,685,748, Cl. 241-41.000.

Beckman Instruments, Inc.: *See—*
Sawa, Kenneth B.; and Neti, Radhakrishna Murty, 3,686,091.

Beckman Instruments, Ltd.: *See—*
Scott, William Anthony, 3,685,885.

Beckman, Joseph A.: *See—*
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Beckman, Joseph A., 3,686,345.

Beckmann, Gunter; and Finkmann, Hans-Ulrich, to Chemische Werke Huls Aktiengesellschaft. Method for preparing dimensionally stable articles of polybutene-1. 3,686,388, Cl. 264-237.000.

Bedekar, Shreekant: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.

Behr, Michael I.; and Carr, Allan E., to Burroughs Corporation. Method and apparatus for testing magnetic disc files. 3,686,682, Cl. 340-174.10b.

Behr, Michael J., to Burroughs Corporation. Magnetic positioning mechanism with trapezorida head. 3,686,649, Cl. 340-174.10c.

Beifuss, Horst: *See—*
Safrata, Leon; Beifuss, Horst; Bormann, Hans; and Rost, Gunter, 3,685,242.

Beigay, Jack M.: *See—*
Zaremski, Donald R.; Beigay, Jack M.; and Heavner, William D., Jr., 3,685,136.

Beiswanger, John P. G.: *See—*
Eisenan, Fred S., Jr.; Schenck, Leslie Millard; and Beiswanger, John P. G., 3,686,368.

Belanger, Inc.: *See—*
Belanger, James A., 3,685,217.

Belanger, James A., to Belanger, Inc. Rotary finishing wheel or tool. 3,685,217, Cl. 51-337.000.

Belcher, Samuel L., to Owens-Illinois, Inc. Pallet. 3,685,461, Cl. 108-51.000.

Bell & Howell Company: *See—*
Koeber, Henry J., 3,685,891.
Thomsen Jack W., 3,685,766.

Bell Electric Company: *See—*
Zerwes, Paul J.; and Cohen, Theodore A., 3,686,425.

Bell, Ramsay M., to Hammond Machinery Builders, Inc. Device for smoothing irregularities. 3,685,393, Cl. 90-1.400.

Bell, Stanley C.; and Wei, Peter H. L., to American Home Products Corporation. 2-Acylamido 3-aryl-3H-indol-3-ol esters and related compounds. 3,686,210, Cl. 260-326.13r.

Bell Telephone Laboratories, Incorporated: *See—*
Brojdo, Samuel, 3,686,645.

Bell, William W. Holder apparatus for skis. 3,685,667, Cl. 211-60.0sk.

Bellamy, David, Jr., to Baxter Laboratories, Inc. Indwelling catheter with breakaway needle and lanyard advancing means. 3,685,513, Cl. 128-214.400.

Beloit Corporation: *See—*
Arav, Ronnie A.; and Trentini, Gianpietro, 3,686,386.
Frye, Kenneth G.; Lucas, Robert G.; and Rohosy, Soma M., 3,685,379.

Bemben, Franklin Theodore. Drum. 3,685,389, Cl. 84-411.000.

Bemberg, Paul. Sauna cabin. 3,685,060, Cl. 4-160.000.

Benbrook, Charles H.: *See—*
Leclair, Albert W.; and Benbrook, Charles H., 3,685,996.

Bendix Corporation, The: *See—*
Clasby, David N.; and Hall, Roger D., 3,686,674.

Beneze, Heinz Wilhelm, to Firestone Tire and Rubber Company, The. Method of making a pneumatic tire. 3,686,389, Cl. 264-250.000.

Bengt Erik Orr, to Aktiebologet Electrolux. Jack. 3,685,797, Cl. 254-88.00b.

Benigno, Paolo; and Primicerio, Fernando, to Minnesota Mining and Manufacturing Company. Reel-storage box. 3,685,642, Cl. 206-52.00f.

Bennes Marrel: *See—*
Dekeyser, Lucien, 3,685,921.

Bennett, Everett W., to Union Carbide Corporation. Linear 1,3,3,7-Tetrachlorohexamethyltetrasiloxane and the production thereof. 3,686,253, Cl. 260-448.20r.

Bennett, Lawrence R.: *See—*
Blau, Theodore H.; and Bennett, Lawrence R., 3,685,169.

Bennett, Melvin L. End shield for paint roller. 3,685,084, Cl. 15-230.110.

Benson, Field and Epes: *See—*

Benson, Homer E., 3,685,960.
Benson, Homer E., to Benson, Field and Epes. Separation of CO_2 and H_2S from gas mixtures. 3,685,960, Cl. 23-2.00r.
Benson, James R., to Durrum Chemical Corporation. Chromatographic method. 3,686,118, Cl. 210-31.00c.
Bentall, Richard Hugh Cameron, to National Research Development Corporation. Fortal blood sampling endoscope. 3,685,509, Cl. 128-2.00f.
Benzoni, Luigi: *See—*
Albanese, Pietro; Benzoni, Luigi; Corain, Benedetto; and Turco, Aldo, 3,686,264.
Berger, Edward: *See—*
Knell, Martin; and Berger, Edward, 3,686,281.
Bergling, Charles; and Birger, Gunnar, to Ingenjorsfirma Hebe AB. Conveyor belt for sheet-metal. 3,685,634, Cl. 198-41.000.
Berkebile, Lee E. Gas-blast circuit interrupter with primary and secondary blast valves. 3,686,454, Cl. 200-148.00r.
Berler, Robert M., to Pitney Bowes-Alpex, Inc. Photoelectric manual reader for printed coded tags. 3,685,723, Cl. 235-61.11e.
Bernhardt Apparatebau GmbH & Co.: *See—*
Bernhardt, Jost; and Bohle, Friedrich, 3,685,069.
Bernhardt, Jost; and Bohle, Friedrich, to Bernhardt Apparatebau GmbH & Co. Device for opening the protective cover of an inflatable body. 3,685,069, Cl. 9-316.000.
Bernhart, Donald N., to Stauffer Chemical Company. Process for preparing organic thiols from polysulfides. 3,686,329, Cl. 260-609.00r.
Berns, Harald, to Sehlbach, Herbert, K. G., Firma. Suspension fitting for cargo safety straps. 3,685,778, Cl. 248-361.00a.
Berry, Hammond A., to Sheldon, E. H., and Company. Mobile cabinet. 3,685,851, Cl. 280-43.220.
Berry, Norman H., to Whitakercable Corporation. High frequency shield for spark plug boot having suppression coil therein. 3,686,606, Cl. 338-66.
Berstorff, Herrmann Maschemenbau GmbH: *See—*
Anders, Dietmar, 3,685,751.
Bertea Corporation: *See—*
Byford, Frank, 3,685,531.
Bertin & Cie Boite Postale: *See—*
Bertin, Jean Henri, 3,685,612.
Bertin, Jean Henri, to Bertin & Cie Boite Postale. Gas ejection device with a silencer feature. 3,685,612, Cl. 181-33.0hc.
Bertram, James L., to Dow Chemical Company, The. Glycidyl ethers of haloneopentyl glycols. 3,686,358, Cl. 260-830.0tw.
Bethlehem Steel Corporation: *See—*
Diegelman, Frederick Henry, 3,685,736.
Beuerle, Harbert; and Haberlen, Roland, to AESCULAP-WERKE A.G. vormals Jetter & Scheerer. Surgical instrument for high-frequency surgery. 3,685,518, Cl. 128-303.170.
Beusink, Bernard Joseph: *See—*
Horowitz, Alexandre; and Beusink, Bernard Joseph, 3,685,265.
Beusman, Curtis C., to Curtis Instruments, Inc. Method of operating a coulometric device. 3,686,566, Cl. 324-94.000.
Bezugly, Stanislav Leontievich; Sidorsky, Mikhail Andreevich; and Kutlyar, Vladimir Petrovich. Monitor of series-connected rectifiers in high-voltage converter unit. 3,686,559, Cl. 321-8.00r.
Bianchi, Gianfranco: *See—*
Lombardi, Aurelio; Anelli, Pietro; and Bianchi, Gianfranco, 3,686,428.
Bianco Satin S.r.l.: *See—*
Casini, Paola; and Mollaretti, Virginia, 3,686,011.
Bickel, Hans; Mueller, Johannes; and Bosshardt, Rolf, to Ciba-Geigy Corporation. Derivatives of 7-(-5-aminotetrazolylacetylamino)-cephalosporanic acid. 3,686,172, Cl. 260-243.00c.
Bien, Hans-Samuel: *See—*
Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, 3,686,232.
Bigdon, Orville W.; Edwards, Robert S.; and Powers, William J., III, to Texaco Inc. Process for preparation of zinc dialkyl dithiophosphates. 3,686,243, Cl. 260-429.900.
Bigou, Jacques: *See—*
Garnier, Michel; and Bigou, Jacques, 3,686,533.
Bildsoe, Jorgen S., to Seatech Engineering, Inc. Pallet. 3,685,637, Cl. 198-189.000.
Billi, G., & C. S.p.A.: *See—*
Giachetti, Alfredo; Maranghi, Enzo; and Piericci, Angiolo, 3,685,317.
Bilodeau, Paul J.: *See—*
Amtsberg, Lester A.; Bilodeau, Paul J.; and Judd, Sebastian F., 3,685,593.
Bingham, Richard Albert: *See—*
Powers Patrick; Graham, Reginald; and Bingham, Richard Albert, 3,686,683.
Biotest Serum Institut GmbH: *See—*
Stephan, Wolfgang, 3,686,395.
Bird Machine Company: *See—*
Nichols, George Edwin, Jr., 3,685,722.
Birger, Gunnar: *See—*
Bergling, Charles; and Birger, Gunnar, 3,685,634.
Bissland, John D.: *See—*
McCardell, Willard B., Jr.; Bissland, John D.; and Witek, Roman J., Jr, 3,686,619.
Blacbert, John E., to U.S. Dynamics, Inc. Fiche camera device. 3,685,902, Cl. 355-64.000.
Black, Charles E., III; and Schaad, William J., to Indak Manufacturing Corporation. Electrical switches and turn signal switching systems utilizing the same. 3,686,449, Cl. 200-11.000.
Black, William Hill, Jr. Punching tool for producing connector nail plates. 3,685,336, Cl. 72-325.000.
Blackett, Frank E.; and Sprouse, Jack E. Package insert applicator. 3,686,058, Cl. 156-571.000.
Blanc, Jean: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.
Blattmann, Henri; Javellaud, Jean; and Yerouchalmi, David, to Commissariat a l'Energie Atomique. MHD-generator electrode which is insensitive to the action of alkali-metal seed material. 3,686,519, Cl. 310-11.000.
Blau, Theodore H.; and Bennett, Lawrence R., to Blau, Theodore H., mesne. Teaching method and apparatus. 3,685,169, Cl. 35-8.00r.
Blau, Theodore H., mesne: *See—*
Blau, Theodore H.; and Bennett, Lawrence R., 3,685,169.
Blinov, Alexander Vasilievich: *See—*
Adaev, Evgeny Ivanovich; Blinov, Alexander Vasilievich; Kamaria, Georgy Mikirtychevich; Alexandrovich, Novoslelov Viktor; and Yakimenko, Leonid Markovich, 3,685,121.
Blixt, S. Stefan; and Andersson, Dag Martin, to International Standard Electric Corporation. Circuit arrangement for the presentation of waveforms on viewing screens utilizing raster deflection. 3,686,662, Cl. 340-324.00a.
Bloodgood, John F.: *See—*
Anger, Ernest G.; Richards, Giles J.; Bloodgood, John F.; and Geiger, Roy J., 3,686,556.
Bloomfield, Roger D., to Uniflo Systems Company. Valve for levitated vehicle track. 3,685,788, Cl. 251-28.000.
Blose, Werner, to Schlegel Manufacturing Company, The. Edge protector, moulding or beading. 3,685,231, Cl. 52-716.000.
Blossom, Armond L.: *See—*
Goodgion, James C.; and Blossom, Armond L., 3,685,577.
Blow, Robert H., Jr., to General Motors Corporation. Timer-operated car starter. 3,685,606, Cl. 180-114.000.
Blower Application Company: *See—*
Panning, Artin R., 3,685,437.
Blue, Philip L., to Mallory, P. R., & Co., Inc. Method of making electrical contact materials. 3,685,134, Cl. 29-420.500.
Blum, Albert. Submersible pump assembly. 3,685,926, Cl. 417-424.000.
Blunden, Donald J., to Whitehead & Kales Company. Vehicle tie-down for haul-away trailers. 3,685,856, Cl. 280-179.00a.
Bochis, Richard J.: *See—*
Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., 3,686,110.
Bodai, Conrad A., to Technoscience Systems, Inc. Means of preparing a fuel-air mixture. 3,685,808, Cl. 261-1.000.
Boehly, Michael A.: *See—*
Kavanaugh, Paul K.; and Boehly, Michael A., 3,686,443.
Boehringer Mannheim GmbH: *See—*
Lauer, Karl; Budka, Heinz-Gunter; and Stoeck, Georg, 3,686,117.
Bogert, Robert C.: *See—*
Rudy, Marion F., 3,685,176.
Bogosian, Theodore Oscar. Elastomeric oil slick boom. 3,685,296, Cl. 61-1.00f.
Bohlbro, Hans: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.
Bohle, Friedrich: *See—*
Bernhardt, Jost; and Bohle, Friedrich, 3,685,069.
Bokros, Jack C.; and Ellis, Willard H., to Gulf General Atomic Incorporated. Prosthetic blood circulation device having a pyrolytic carbon coated blood contacting surface. 3,685,059, Cl. 3-1.000.
Boland, Steven H., to Ultra-Violet Products, Inc. Stable glow discharge light source with close temperature control for sharp resonance lines. 3,686,529, Cl. 315-115.000.
Boldingh, Jan; Heslinga, Lammert; Schmidl, Ernst; and Syrovataka, Rudolf, to Lever Brothers Company. Detergent bleach. 3,686,127, Cl. 252-99.000.
Bomco Incorporated: *See—*
Banks, Neill K., Jr., 3,685,475.
Bondarovich, Henry A.: *See—*
Kratz, Philip De C.; and Bondarovich, Henry A., 3,686,004.
Bonhomme, Francois Robert, to Connectronics Corporation. Rapid connection device for an electrical conductor. 3,686,622, Cl. 339-217.00r.
Bonnet, Henri Camille; and Chabert, Jean Edmond. Water-proof article for use in submarine during garments. 3,686,064, Cl. 161-89.000.
Boots Pure Drug Company Limited: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,686,218.
Borg-Warner Corporation: *See—*
Gardner, Willis W., 3,685,617.
Borgen, William Earl: *See—*
Kostel, Paul Steven; Borgen, William Earl; and Willert, Richard Joseph, 3,685,258.
Borgogno, Victor F.: *See—*
Smith, James E.; and Borgogno, Victor F., 3,685,604.
Borkton, Edgar B. Yogurt machine. 3,685,153, Cl. 31-2.000.
Bormann, Hans: *See—*

Safrata, Leon; Beifuss, Horst; Bormann, Hans; and Rost, Gunter, 3,685,242.

Borner, Helmut; and Herz, Robert, to Andreae & Mayer GmbH. Automatic-delivery apparatus for vending unstackable goods. 3,685,689, Cl. 221-90.000.

Boron, Joseph; and Lowdermilk, Marvin J., to Electro-Nite Engineering Co. Expendable lance. 3,685,359, Cl. 73-354.000.

Borrmann, Dieter: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,686,198.

Bosch, Ludwig; Fleiner, Sigmund; and Fleissner, Heinz. Process and apparatus for the continuous finishing of knit fabrics and hosiery goods. 3,685,323, Cl. 68-5.00d.

Bosshardt, Rolf: *See—*
Bickel, Hans; Mueller, Johannes; and Bosshardt, Rolf, 3,686,172.

Bostrom, Sten L., to Dasy Inter S.A. Electronic locking device. 3,686,659, Cl. 340-274.000.

Bostrom, Sten L., to Dasy Inter S.A. Electronic locking device. 33,686,659, Cl. 340-274.000.

Bottcher, Wolfgang; Kopineck, Hermann-Josef; Schlusnus, Karl-Heinz; and Sommerkorn, Gernot, to Hoesch Aktiengesellschaft. Method and apparatus for testing welding seams by ultrasound energy. 3,685,348, Cl. 73-67.80r.

Bougut, Henry A., to Motorola, Inc. Current limited battery pack. 3,686,530, Cl. 317-16.000.

Bouligny, R. H., Inc.: *See—*
King, Charles S. W.; and Pierce, John H., 3,685,755.

Bouton, Thomas; and Futamura, Shingo, to Firestone Tire & Rubber Company, The. Process for preparing colorless, high-vinyl diene polymers. 3,686,158, Cl. 260-94.20m.

Bowen, Gilbert John. Apparatus for lens generation. 3,685,210, Cl. 51-33.00w.

Bowerman, William R. Data processing card. 3,686,480, Cl. 235-61.12n.

Bowerman, William R. Fastener. 3,686,616, Cl. 339-38.000.

Bowman, John Michael, to Du Pont de Nemours, E. I., and Company. Guanidine and amidine accelerators for vulcanization of fluoroelastomers. 3,686,143, Cl. 260-470.0up.

Bowring, Graeme, to Schermuly Limited. Striker mechanisms for percussion igniters. 3,685,451, Cl. 102-70.000.

Box Innards, Inc.: *See—*
Peters, Charles L., 3,685,401.

Boyd, John A. Incinerator conversion means. 3,685,439, Cl. 100-215.000.

Bracke, William J. I., to Cosden Oil & Chemical Company. Heterocyclizing of polymer. 3,686,141, Cl. 260-47.0up.

Bradshaw, Arthur; and Podmore, Dennis, to Service (Engineers) Limited. Clay injection molding machine. 3,685,940, Cl. 425-218.000.

Bradshaw, Clayton H., to Abex Corporation. Encapsulated rivet and anvil arrangement. 3,685,623, Cl. 192-107.00r.

Bradshaw, Thomas I., to Minnesota Mining and Manufacturing Company. Insect trap. 3,685,199, Cl. 43-114.000.

Brady, Charles E. Package for sterilized products. 3,685,720, Cl. 229/062/000.

Brady, Dale J., to Anchor Hocking Corporation. Pneumatic article spreader. 3,685,632, Cl. 198-31.000.

Brandt, Hans-Walther: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.

Braucksick, Henry C.: *See—*
Caparone, Michael J.; Dykzeul, Theodore J.; Lynwood, Edward B.; and Braucksick, Henry C., 3,685,541.

Breeden, William J.: *See—*
Pearce, Godfrey R.; and Breeden, William J., 3,686,536.

Breiner, A. W.: *See—*
Oscari, Romano, 3,685,240.

Brenneman, Homer K.: *See—*
Cable, Russell D.; and Brenneman, Homer K., 3,685,535.

Bristol-Myers Company: *See—*
Yablonsky, Harvey A., 3,686,296.

Bristow, Norman William: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,686,218.

British Aircraft Corporation, Limited: *See—*
Stephen William Tonkin, 3,685,770.

British Oxygen Company, Limited, The: *See—*
Power, Basil Dixon, 3,686,474.

British Railways Board: *See—*
Ogilvy, Harry Heggie; Tuck, Elizabeth Margaret; Dobbs, David John Miller; and Rosser, John Anthony, 3,685,454.

Britton, Robert A., to Esso Research and Engineering Company. Direct hydration of ethylene to ethanol. 3,686,334, Cl. 260-641.000.

Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Three-phase alternating current self-cascaded rotary electric machine. 3,686,553, Cl. 318-199.000.

Brock, Norbert: *See—*
Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, 3,686,311.

Brodnitz, Michael H.; Pascale, John V.; and Vock, Manfred H., to International Flavors & Fragrances, Inc. Thioalkanal-S-oxides. 3,686,323, Cl. 260-607.00r.

Brodnitz, Michael H.; and Pascale, John V., to International Flavors & Fragrances, Inc. Process for producing di- and trisulfides from thiosulfinotes. 3,686,324, Cl. 260-608.000.

Brojdo, Samuel, to Bell Telephone Laboratories, Incorporated. Charge storage flip-flop. 3,686,645, Cl. 340-173.0ff.

Brons, Albert J.: *See—*
DePalma, Ted V.; Brons, Albert J.; and Perga, Martin W., 3,685,972.

Brookes, Kenneth Joseph Alban, to International Nickel Company, The. Calculating device. 3,685,727, Cl. 235-70.00r.

Brothers' Metal Products, Inc.: *See—*
Siegmann, Robert L., 3,685,560.

Brower, Jerome S.; and Smith, Douglas D. Safety reel. 3,686,448, Cl. 191-122.00r.

Brown, Boveri & Cie, AG: *See—*
Domres, Hans Georg; Simons, Emil; and Gillhaus, Horst, 3,685,573.

Brown, Donald J., to Morehouse Industries, Inc. Sandmill vessel. 3,685,749, Cl. 241-65.000.

Brown, Elmer T.; and Carroll, Jackson H., to West Coast Adhesives Company. Method for producing elongated plywood panels. 3,686,061, Cl. 161-56.000.

Brown, Gordon R., to All-Power Manufacturing Co. Ice cube tray or the like. 3,685,785, Cl. 249-129.000.

Brown, Ralph D., to Westinghouse Electric Corporation. System and method for determining whether drain conduits for draining condensate from the turbine casing are clogged and clearing the conduits if they are. 3,685,292, Cl. 60-105.000.

Brown, Rex M.: *See—*
Rich, Blaine B.; and Brown, Rex M., 3,685,404.

Brown, Robert L.: *See—*
Pfenning, Dwight B.; and Brown, Robert L., 3,686,090.

Brown, Roger S.; and Rhodes, Philip L., to United States of America, Agriculture. Card cover with fiber-conveying channels. 3,685,100, Cl. 19-98.000.

Broyles, William R.; and Search, Robert L., to General Motors Corporation. Method for reducing interlaminate bonding in magnetic cores. 3,686,043, Cl. 148-112.000.

Bruce, Peter. Anchor-cable systems. 3,685,479, Cl. 114-206.00r.

Bruer, Dirk; Schaible, Siegried; Wagenblast, Ernst; and Hohlwegler, Heinz, to Maschinenfabrik Fahr Aktiengesellschaft. Vehicle with selective load-height and dumping capabilities. 3,685,674, Cl. 214-314.000.

Bruning, Armin M., to Westinghouse Electric Corporation. Furnace and electrode apparatus. 3,686,420, Cl. 13-15.000.

Brunner, Erwin; Platz, Rolf; Taglieber, Kurt; and Weinfurter, Kurt, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of acetylene. 3,686,344, Cl. 260-679.00a.

Brunner, Robert V.: *See—*
Howell, Richard S.; and Brunner, Robert V., 3,686,676.

Bruson, Herman A.: *See—*
Hein, Richard W.; and Bruson, Herman A., 3,686,297.

Bruzzano, Gennaro J. Recorder and pen assembly therefor. 3,686,680, Cl. 346-140.000.

Bschorr, Oskar, to Messerschmitt-Bolkow-Blohm, GmbH. Noise reduction for propellers. 3,685,610, Cl. 181-33.00l.

Buchesky, David M.; and Somjak, John R., to Chrysler Corporation. Vehicle spring. 3,685,812, Cl. 267-36.000.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 3,685,796.

Budka, Heinz-Gunter: *See—*
Lauer, Karl; Budka, Heinz-Gunter; and Stoeck, Georg, 3,686,117.

Bullard, E. D., Company: *See—*
Raschke, Herbert A., 3,685,054.
Raschke, Herbert A., 3,685,512.

Bunker-Ramo Corporation, The: *See—*
Albee, Thomas K., 3,686,596.
Delberghe, Jean Henri, 3,685,315.
Hoppis, Larry; and Willett, Richard L., 3,686,594.
Nijman, John P., 3,686,623.
Scarbrough, Alfred D., 3,685,145.

Burdet, Evelyne; and Hofer, Kurt. Nickel compounds. 3,686,246, Cl. 260-439.00r.

Burge, Joseph C., to General Electric Company. Actuation ring for variable geometry compressors of gas turbine engines. 3,685,920, Cl. 415-147.000.

Burger, William H.; and Rightor, Edward, Jr., to Kimberly-Clark Corporation. Machine for making diapers. 3,685,818, Cl. 270-61.000.

Burhans, Allson S.: *See—*
Soldatos, Anthon C.; and Burhans, Allson S., 3,686,359.

Burke, Oliver W., Jr. Silica pigments and elastomer-silica pigment masterbatches and production processes relating thereto. 3,686,113, Cl. 260-33.6ao.

Burke, Oliver W., Jr. Silica pigments and elastomer-silica pigment masterbatches and production processes relating thereto. 3,686,219, Cl. 260-336.0ao.

Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,686,220, Cl. 260-33.6ao.

Burke, Richard J., to California Portland Cement Company. Cleaning of filters using vortex rings. 3,685,257, Cl. 55-96.000.

Burkhalter, Robert, Jr.: *See—*
Heskftt, Don Edward; Hoover, Frank Kryder; Burkhalter, Robert, Jr.; and Anderson, Douglas West, 3,685,659.

Burmah Oil Trading Limited: *See—*
Fletcher, John Vincent; and Martin, Dennis, 3,686,289.

Burroughs Corporation: *See—*
Behr, Michael I.; and Carr, Allan E., 3,686,682.
Behr, Michael J., 3,686,649.
Gleim, Ralph A.; and Groom, Robert G., 3,686,650.
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.

Butter, Karl; Wittich, Willibald; and Theiss, Armin, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Method for incorporating strength increasing filler materials in a matrix. 3,686,081, Cl. 204-16.000.

Buzby, George C., Jr.; Walk, Charles R.; and Smith, Herchel, to American Home Products Corporation. A-nor-13-ethyl-17-hydroxy-A-norgon-3-en-2-one. 3,686,317, Cl. 260-586.00h.

Byford, Frank, to Bertea Corporation. Circuit breaker. 3,685,531, Cl. 137-101.110.

Cable, Russell D.; and Brenneman, Homer K., to Porta Service Inc. Mobile washing apparatus. 3,685,535, Cl. 137-265.000.

Cadiou, Jean-Georges, to Societe Anonyme Automobiles Citroen. Vehicles with short wheel base and of small bulk, especially passengers vehicles. 3,685,854, Cl. 280-106.50r.

Caiola, Robert J.: *See—*
Walles, Wilhelm E.; Caiola, Robert J.; and Donald, Harold J., 3,685,446.

Calcote, Hartwell Forrest, to Aero Chem Research Laboratories, Inc. Splash surface aerator. 3,685,810, Cl. 261-81.000.

Caldwell, Edward M.: *See—*
Puster, Louis M.; and Caldwell, Edward M., 3,685,789.

Caldwell, Richard L.: *See—*
Givens, Wyatt W.; Caldwell, Richard L.; and Mills, William R., Jr., 3,686,503.

Caliari, Sergio: *See—*
Olcelli, Gian Battista; Caliari, Sergio; and Montessori, Giuseppe, 3,686,632.

California Auto Radio, Inc.: *See—*
Tsuji, Tom T., 3,685,879.

California Portland Cement Company: *See—*
Burke, Richard J., 3,685,257.

Callendar, Max V.; and Cox, Victor J., to Pye Limited. Receiver for use with a direction finding or radar receiving system. 3,686,670, Cl. 343-113.00r.

Calvin, Victor E.: *See—*
Frick, Roy C.; Calvin, Victor E.; Sharpe, John C.; and Rowe, William Wallace, 3,686,054.

Campagnuolo, Carl J., to United States of America, Army. Fluid-electrical generator. 3,686,520, Cl. 310-15.000.

Campbell, Albert E., to Chevron Research Company. Apparatus for forming foam for use in wells. 3,685,807, Cl. 259-147.000.

Camras, Marvin, to IIT Research Institute. Transducer system adaptable for audio or video recording or reproduction. 3,686,433, Cl. 178-6.60a.

Camras, Marvin, to IIT Research Institute. Multiple video signal transducing system and method. 3,686,436, Cl. 178-6.6sf.

Camras, Marvin, to IIT Research Institute. Magnetic transducer system and method. 3,686,467, Cl. 179-100.200.

Canada Packers Limited: *See—*
Fill Metro, 3,685,095.

Canas-Rodriquez, Antonio; and Leeming, Peter R., to Pfizer Inc. 3-Aminoalkyl-1-phenyl-indolines and 2-indolinones in alleviating mental depression. 3,686,182, Cl. 424-274.000.

Cander, Anthony J.: *See—*
Levine, Samson P.; Kugler, Ralph W.; and Cander, Anthony J., 3,685,376.

Cannon, Richard L.; and Smith, Leonard, R. D., to Dale Electronics, Inc. Switching apparatus for a player piano. 3,685,383, Cl. 84-160.000.

Canon Kabushiki Kaisha: *See—*
Kutsuwada, Noboru; and Nagamatsu, Katsumi, 3,685,485.

Caparone, Michael J.; Dykzeul, Theodore J.; Lynwood, Edward B.; and Braucksick, Henry C. Controller and mixer of plural fluids and methods. 3,685,541, Cl. 137-599.000.

Cappel, Marie-Luise: *See—*
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,685,474.

Carlile, Alfred E.; and Cox, Bernard H., to Textron Inc. Molded plastic snap fastener and strip of components therefor. 3,685,105, Cl. 24-213.000.

Carmody, Michael A., to United States of America, Army. Pulse responsive counting circuits. 3,686,633, Cl. 340-168.000.

Carpenter, Mark Richard; and Ludwig, Albert P., to Vepa AG. Thread roll dies. 3,685,328, Cl. 72-88.000.

Carpenter, William T., to Synalloy Corporation. Apparatus for liquid treatment of textile material. 3,685,325, Cl. 68-177.000.

Carr, Allan E.: *See—*
Behr, Michael I.; and Carr, Allan E., 3,686,682.

Carr, Walter J., Jr: *See—*
Mallick, George T., Jr.; Carr, Walter J., Jr; and Miller, Robert C., 3,686,564.

Carraro, Giorgio; Del Vesco, Adriano; and Olinoo, Santino, to Montecatini Edison S.p.A. Process for the preparation of acyclic dicarboxylic acids from dienic hydrocarbons. 3,686,299, Cl. 260-537.00r.

Carrier Corporation: *See—*
Czuszak, Charles C.; and Worthen, Richard A., 3,685,791.

Carroll, Jackson H.: *See—*
Brown, Elmer T.; and Carroll, Jackson H., 3,686,061.

Carroll, Robert L., to Monsanto Company. Processes for preparing olefinic organo-phosphorus compounds. 3,686,290, Cl. 260-502.40p.

Carson, Don B., to Universal Oil Products Company. Flow distributing apparatus. 3,685,971, Cl. 23-288.00r.

Carver, Bryan George; and Crooks, Ronald, to G.K. N. Group Services Limited. Apparatus for die-casting metals. 3,685,572, Cl. 164-312.000.

Casani, John R.: *See—*
Pounder, Edwin; and Casani, John R., 3,685,352.

Casani, John R.; and Pounder, Edwin, to Transdynamics, Inc. Wind control steering system for sailboats. 3,685,478, Cl. 114-144.000.

Case, J. I., Company: *See—*
Frisbee, Claude M., 3,685,592.
Little, William E., 3,685,398.

Case, J. J., Company: *See—*
Stannebein, Clifford E., 3,685,780.

Casini, Paola; and Mollaretti, Virginia, to Bianco Satin S.r.l. Satin-white for use in paper glaze, paints and the like, and process for the production thereof. 3,686,011, Cl. 106-306.000.

Caslow, Joseph H.; Huber, Melvin F.; and Wootten, John A., to Lear Siegler, Inc. Portable infusion pump. 3,685,697, Cl. 222-137.000.

Cassinelli, Giuseppe: *See—*
Arcamone, Federico; Cassinelli, Giuseppe; Penco, Sergio; and Tognoli, Luigi, 3,686,163.

Castedello, William, to Kalart Company Inc., The. Cassette for a sound slide projector. 3,685,893, Cl. 353-120.000.

Caster, Glenn, to Baxter Laboratories, Inc. Fluid flow valve. 3,685,795, Cl. 251-342.000.

Castillo, Adolfo: *See—*
Jureit, John Calvin; Csakvary, Oscar; and Castillo, Adolfo, 3,685,129.

Cavender, James V., Jr., to Monsanto Company. Process for the polymerization of ethylene comprising the simultaneous use of two Ziegler-type catalyst complexes. 3,686,160, Cl. 260-94.90b.

CCI Corporation: *See—*
Goldsmith, Ave S., 3,685,853.

Cecere, Andrew P., to Samcoe Holding Corporation. Spreader-propeller apparatus for tubular knitted fabrics. 3,685,108, Cl. 26-55.00r.

Ceelen, Theodore M.: *See—*
Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., 3,686,678.

Celotex Corporation, The: *See—*
Herrell, Robert E.; and Moore, Stephen G., 3,685,253.

Cessna, James W. Sliding gate valve having spring brased slide. 3,685,705, Cl. 222-504.000.

Chabert, Jean Edmond: *See—*
Bonnet, Henri Camille; and Chabert, Jean Edmond, 3,686,064.

Chafin, James M.: *See—*
Wright, John G.; and Chafin, James M., 3,685,815.

Challey, John R.: *See—*
Weintraub, Philip M.; and Challey, John R., 3,686,185.

Chamberlain, Richard Travers, to Admiral Corporation, mesne. VHF-UHF varactor tuner control circuit. 3,686,575, Cl. 325-459.000.

Chambon, Louis Jean, to Societe d'Etudes de Machines Specials. Apparatus for receiving sheets cut from a web. 3,685,823, Cl. 271-80.000.

Chance, Joe I.: *See—*
Griesheimer, George T.; and Chance, Joe I., 3,686,373.

Chang, Kuo Yuan, to Dow Chemical Company, The. Method of reducing the halogen content of halo-aromatics. 3,686,337, Cl. 260-650.00r.

Chapou, Yves. Thermostatic mixing faucet. 3,685,728, Cl. 236-12.000.

Charest, Andre. Newspaper dispensing machine. 3,685,691, Cl. 221-225.000.

Charlesworth, Eric, to Jenkins, Robert, & Company Limited. Method of multiple spot welding. 3,686,463, Cl. 219-127.000.

Charrier, Rolf. Means for setting the hands of a timepiece. 3,685,281, Cl. 58-85.500.

Chastain George R.: *See—*
Karecki, Marion R.; Chastain George R.; and Barnes, Thomas R., 3,685,690.

Chavarria, Melchor Julio; and Risso, Osvaldo. Double-acting hydraulic pump. 3,686,687, Cl. 417-223.000.

Checheljuk, Yakov Zinovievich: *See—*
Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Afanasiev, Mikhail Andreevich, 3,685,435.

Cheeseman, Carl Anthony. Room temperature vulcanizable silicone rubber stocks. 3,686,357, Cl. 260-825.000.

Chell, Frederick Nunnerley: *See—*
Robinson, Frank; and Chell, Frederick Nunnerley, 3,685,316.

Chemische Werke Huls Aktiengesellschaft: *See—*
Beckmann, Gunter; and Finkmann, Hans-Ulrich, 3,686,388.

Chemtob, Elie M.; and Marcote, Rolando V., to Occidental Petroleum Corporation. Flotation recovery of mirabilite from salt complexes. 3,685,652, Cl. 209-166.000.

Chen, Philip L., to Xerox Corporation. Optical recorder. 3,685,406, Cl. 95-4.50r.

Cheney Extrusions (Australia) Limited: *See—*
McDonald, Dean Barry; and McBride, Albert James, 3,685,405.

Cheney, Paul E., to Silver Industries, Inc. Two compartment syringe. 3,685,514, Cl. 128-218.00m.

Chernack, Milton P., to Delcron Products, Inc. Smoking device. 3,685,520, Cl. 131-182.000.

Chernowitz, Maurice E. Record card holder and acoustical device. 3,685,836, Cl. 274-4.00j.
Cherry-Burrell Corporation: *See—*
Encke, Robert B., 3,685,554.
Chevron Research Company: *See—*
Campbell, Albert E., 3,685,807.
Kohn, Gustave K.; and McMurtry, Randolph J., 3,686,398.
Chicago Display Company: *See—*
Snyder, Harlan K., Jr., 3,685,184.
Chicago Musical Instrument Co.: *See—*
Rendell, Stanley E., 3,685,385.
Chicago Pneumatic Tool Company: *See—*
Amtsberg, Lester A.; Bilodeau, Paul J.; and Judd, Sebastian F., 3,685,593.
Chidgey, Alfre Leonard, to Robinson, E S & A Limited. Tray or box. 3,685,718, Cl. 229-34.00r.
Chigirinsky, Alexandr Abramovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich, 3,686,522.
Chigrinov, Mikhail Grigorievich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.
Chiolle, Antonio: *See—*
Parrini, Paolo; Credali, Lino; and Chiolle, Antonio, 3,686,100.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffmann-La Roche, Inc. Methylenedioxy-phenoxy derivatives. 3,686,222, Cl. 260-340.500.
Chovanec, John J.: *See—*
Hildebrant, Floyd J.; and Chovanec, John J., 3,685,347.
Christensen, Alton O., to Shell Oil Company. Gated diode memory. 3,686,644, Cl. 340-100.0br.
Christianson, George, to General Mills, Inc. Flavored ready-to-eat breakfast cereal. 3,686,001, Cl. 99-83.000.
Christopher, Ronald C., to Rohr Corporation. Thrust controlling apparatus. 3,685,737, Cl. 239-265.190.
Chromalloy American Corporation: *See—*
Palmenberg, Edward C., 3,685,219.
Chrysler Corporation: *See—*
Adams, Don, III, 3,685,369.
Buchesky, David M.; and Somjak, John R., 3,685,812.
Chuin Gear, Incorporated: *See—*
Marx, Norbert M.; and Lichtenwalter, Carl G., 3,685,756.
Chung, Harold: *See—*
Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, 3,686,159.
Ciba Corporation: *See—*
Dickel, Daniel Frederick; and DeStevens, George, 3,686,211.
Schenker, Karl, 3,686,217.
Ciba Geigy Corporation: *See—*
Howarth, Graham Arton; and Hoyle, William, 3,686,408.
Schindler, Walter; and Schmid, Erich, 3,686,402.
Ciba-Geigy AG: *See—*
Artz, Klaus, 3,686,162.
Milicevic, Branimir; and Litzler, Alfred, 3,685,955.
Ciba-Geigy Corporation: *See—*
Bickel, Hans; Mueller, Johannes; and Bosshardt, Rolf, 3,686,172.
Hoyle, William; and Savage, Michael Philip, 3,686,170.
Huebner, Charles Ferdinand, 3,686,188.
Kirchmayr, Rudolf; and Rody, Jean, 3,686,202.
Knell, Martin; and Berger, Edward, 3.686,281.
Ciemochowski, Michael F., to Holley Carburetor Company. Turbine engine cycle counter. 3,686,484, Cl. 235-92.0fg.
Cincinnati Industries, Inc.: *See—*
Frick, Roy C.; Calvin, Victor E.; Sharpe, John C.; and Rowe, William Wallace, 3,686,054.
Cincinnati Melacron-Heald Corporation: *See—*
Straub, Bruno E.; and Grotewold, William H., 3,685,395.
C.I.T.-Compagnie Industrielle des Telecommunication: *See—*
Rousseau, Claude, 3,686,438.
Citrex, S.A.: *See—*
Smeets, Alfred, 3,686,126.
Clark Equipment Company: *See—*
Bauer, James J., 3,685,365.
Clark, Harold V.; and Engbretson, Gerald C., to Ampex Corporation. Steady state phase error correction circuit. 3,686,469, Cl. 179-100.20t.
Clark, Rosalind E.: *See—*
Greene, Janice L.; and Clark, Rosalind E., 3,686,307.
Clasby, David N.; and Hall, Roger D., to Bendix Corporation, The. Microwave spiral antenna structure. 3,686,674, Cl. 343-895.000.
Clements, John W., to Flexicon Electronics, Inc. Electrical connector. 3,686,612, Cl. 339-17.0cf.
Cleminshaw, Douglas R.: *See—*
Scott, Merton E.; Schmutzler, Richard W.; and Cleminshaw, Douglas R., 3,685,097.
Clot, Jean: *See—*
Falvert, Daniel; Giralt, Georges; Clot, Jean; and Authie, Gerard, 3,686,492.
Coanda, Henri; and Teodorescu, Constantin, to Institutul Pentru Creatie Stiintifica si Tehnica. Method and device for attenuating the noise generated by the expansion of gases into the atmosphere. 3,685,614, Cl. 181-33.00e.
Coastal Zone Resources Corporation of N.C.: *See—*
Adams, David A., 3,685,490.
Coats Company, Inc., The: *See—*
Sorenson, Billy L.; and Strang, Elmer J., 3,685,565.
Coaxial Scientific Corporation: *See—*
McVoy, David S., 3,686,573.
Cochran, William H., II. Apparatus for determining flammability. 3,685,343, Cl. 73-15.00r.
Codina, Jorge G. Weighing apparatus. 3,685,603, Cl. 177-178.000.
Cogar Corporation: *See—*
Andersen, Stanley R.; and Kinkade, Robert G., 3,686,640.
Cohee, Donald R.: *See—*
Wright, Joseph E., Jr.; and Cohee, Donald R., 3,685,895.
Cohen, Tbeodore A.: *See—*
Zerwes, Paul J.; and Cohen, Tbeodore A., 3,686,425.
Cole, John Wayne; and Hallas, Robert, to Abbott Laboratories. 4-Anilino-1-(4-p-fluorophenyl-1-butyl) piperidine compounds. 3,686,187, Cl. 260-293.790.
Coleco Industries, Inc.: *See—*
Hunter, Bruce H.; and Reiner, Norbert L., 3,685,657.
Coleman Company, Inc., The: *See—*
Goodgion, James C.; and Blossom, Armond L., 3,685,577.
Coleman, Lewis E.: *See—*
Paige, Dennis D.; and Coleman, Lewis E., 3,685,468.
Coll-Palagos, Miguel, to Stauffer Chemical Company. Electroless nickel plating on glass. 3,686,020, Cl. 117-54.000.
Collazuol, Mario: *See—*
Di Salvo, Salvatore; and Collazuol, Mario, 3,686,497.
Colling, Philip M.: *See—*
Dean, Johnny C.; and Colling, Philip M., 3,686,347.
Collins, Robert A. Method and means for boring earth. 3,685,596, Cl. 175-57.000.
Colomb, Louis F.: *See—*
Neuman, Marcel L.; and Colomb, Louis F., 3,685,116.
Combustion Engineering, Inc.: *See—*
Deve, Vagn, 3,685,165.
Gaines, Albert L., 3,686,071.
Tuppeny, William H., Jr., 3,685,547.
Combustion Unlimited, Incorporated: *See—*
Straitz, John F., III, 3,685,534.
Comco Supply, Inc.: *See—*
Lambert, Arthur H., 3,685,209.
Commercial Solvents Corporation: *See—*
Dowling, Thomas P., 3,685,449.
Commissariat a l'Energie Atomique: *See—*
Blattmann, Henri; Javellaud, Jean; and Yerouchalmi, David, 3,686,519.
Compagnie des Atebiers et Forges de la Loire: *See—*
Gay, Pierre Andre, 3,685,711.
Compagnie Francaise Thomson-Houston: *See—*
Guilhem, Robert Germain; and Fouche, Yvon Pierre Jean, 3,686,572.
Compagnie Generale D-Automatisme: *See—*
Falvert, Daniel; Giralt, Georges; Clot, Jean; and Authie, Gerard, 3,686,492.
Compagnie Generale d'Electricite: *See—*
Denel, Jean; Krebs, Jean-Pierre; and Santa-Maria, Enrique, 3,686,458.
Orgeret, Lucien, 3,686,567.
Compagnie Generale d'Electro-Ceramique: *See—*
Gion, Leon, 3,686,007.
Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Massoubre, Jean-Marie, 3,686,147.
Compressed coding of digitized quantities: *See—*
Elliott, Joseph E.; and International Business Machines Corporation, 3,686,631.
Conenco International Limited, mesne: *See—*
Huber, Hugh Dana; and Edgren, Jack C., 3,685,934.
Conger, David L. Combination ski pants hanger and sales information display device. 3,685,189, Cl. 40-322.000.
Connectronics Corporation: *See—*
Bonhomme, Francois Robert, 3,686,622.
Connelly, Lawrence W.: *See—*
McCurdy, Richard H.; and Connelly, Lawrence W., 3,685,239.
Conner, Edmond E.; and Wentz, Edward C., to Westinghouse Electric Corporation. Potential transformer. 3,686,600, Cl. 336-70.000.
Considine, William J.; and Seltzer, Raymond, to M & T Chemicals, Inc. Polymers of thiadiazole. 3,686,196, Cl. 260-302.0sd.
Consiglio Nazionale Delle Ricerche: *See—*
Parrini, Paolo; Credali, Lino; and Chiolle, Antonio, 3,686,100.
Consolidated Products Incorporated: *See—*
Wesemann, Fred A., 3,685,081.
Continental Can Company: *See—*
Westfall, James E., 3,685,677.
Continental Can Company, Inc.: *See—*
Erlandson, Paul M., 3,686,462.
Roulo, Ronald H., 3,685,710.
Vandervelde, Robert E., 3,685,138.
Cook, Billy G., to General Electric Company. Cooking vessel with detachable handle. 3,685,092, Cl. 16-114.000.

Cook, Vernon W., Jr. Float controlled circuit breaker means. 3,686,534, Cl. 317-123.000.

Cooke, George A.; and Houlihan, William J., to Sandoz-Wander, Inc. Preparation of 4-aryl-2 (1H)-quinazolinones and thiones. 3,686,178, Cl. 260-251.0qb.

Coon, John M. Handgun to rifle conversion assembly. 3,685,194, Cl. 42-77.000.

Coons, William R., Jr.; Nelson, Gerald V.; and Wray, Glenn C., to Texaco Inc. Desulfurization of residue-containing hydrocarbon oils. 3,686,095, Cl. 208-216.000.

Cooper, Jack A., to Lear Siegler, Inc. Linear motion meter device. 3,686,570, Cl. 324-132.000.

Cooper, Ray: *See—*
Wing, Henry; and Cooper, Ray, 3,685,117.

Cooper, Russell C. Wall construction. 3,685,241, Cl. 52-270.000.

Corain, Benedetto: *See—*
Albanese, Pietro; Benzoni, Luigi; Corain, Benedetto; and Turco, Aldo, 3,686,264.

Coran, Aubert Yaucher; and Kerwood, Joseph Edward, to Monsanto Company. Thiocycloamides. 3,686,169, Cl. 260-239.30r.

Cordrey, Richard N., to Armco Steel Corporation. Remote controlled power brake. 3,685,288, Cl. 60-54.50r.

Cosden Oil & Chemical Company: *See—*
Bracke, William J. I., 3,686,141.

Cothran, Samuel Bynum; and Henry, Colin Alexander, to Du Pont de Nemours, E. I., and Company, mesne. Packaging rolls with improved end-suspension support panels. 3,685,644, Cl. 206-59.00f.

Cotton, Curran D., to Maytag Company, The. Convertible token-actuated control system. 3,685,626, Cl. 194-4.00c.

Coughlan, Edward R., to Polaroid Corporation. Photographic apparatus with dynamically controlled reflex action. 3,685,416, Cl. 95-42.000.

Coughlin, Ronald D.: *See—*
Harley, Wayne E.; and Coughlin, Ronald D., 3,686,597.

Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; and Hogg, Walter R., 3,686,486.

Coulter, Wallace H.; and Hogg, Walter R., to Coulter Electronics, Inc. Apparatus for obtaining statistical hematological indices and analyzing same and method. 3,686,486, Cl. 235-151.300.

Courtaulds Limited: *See—*
Robinson, Frank; and Chell, Frederick Nunnerley, 3,685,316.

Cousino, Ralph E., to Orrtronics, Inc. Tape cartridge. 3,685,754, Cl. 242-55.19a.

Cover, Paul F.; Rife, John W.; Kemper, Clyde F.; and Reed, Donald E. Corn cutting machine and method. 3,685,519, Cl. 130-9.00a.

Cowling, Ronald. 3-Hydroxy-4-benzoyphenyl cyclic phosphates. 3,686,367, Cl. 260-937.000.

Cox, Bernard H.: *See—*
Carlile, Alfred E.; and Cox, Bernard H., 3,685,105.

Cox of Watford Limited: *See—*
Babbs, Frederick William, 3,685,872.

Cox, Robert A.: *See—*
Moser, Gene W.; Cox, Robert A.; and Teza, James E., 3,686,429.

Cox, Victor J.: *See—*
Callendar, Max V.; and Cox, Victor J., 3,686,670.

Coyle, Edward L.: *See—*
Grover, George M.; and Coyle, Edward L., 3,686,040.

CPC International Inc., mesne: *See—*
Tamura, Masabi; Yoda, Masayuki; Shinya, Seishi; and Ayukawa, Yaichi, 3,686,144.

Craig, Glenn D.: *See—*
Turecek, Joseph L.; Craig, Glenn D.; and Fueling, David T., 3,685,364.

Crane, Grant: *See—*
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Beckman, Joseph A., 3,686,345.

Craven, Harry J.; Hannahan, William F.; and Viscusi, James J., to General Electric Company. Apparatus for producing a corrugated member. 3,685,931, Cl. 425-89.000.

Credali, Lino: *See—*
Parrini, Paolo; Credali, Lino; and Chiolle, Antonio, 3,686,100.

Creely, Joseph W., to Baxter Laboratories, Inc. Aerosol type antistatic composition. 3,686,120, Cl. 252-8.800.

Crete, Darrel R. Color enlarger sstem. 3,685,901, Cl. 355-38.000.

Crooks, James W. Reversing transmission. 3,685,371, Cl. 74-792.000.

Crooks, Ronald: *See—*
Carver, Bryan George; and Crooks, Ronald, 3,685,572.

Crosby, John J.: *See—*
Adams, Albert C.; Crosby, John J.; and Graf, George W., 3,685,759.

Cross Company, The: *See—*
Pfrommer, Fritz; and Bansal, Suresh A., 3,685,630.

Crouse-Hinds Company: *See—*
Medley, Richard C., 3,686,495.

Crouzet: *See—*
Jullien-Davin, Jean, 3,686,602.

Crowe, Harold W., to Maxon Corporation. Valve actuating mechanism. 3,685,790, Cl. 251-67.000.

Crowley, Richard P. Method of producing a needle punched non-cellular backed carpet. 3,686,046, Cl. 156-72.000.

Crown City Plating Company: *See—*
Maguire, Eileen; and Kadison, Leon A., 3,686,016.

Crown Metal Manufacturing Co.: *See—*
Varon, Albert S.; and Siegal, Burton L., 3,685,662.

Crutcher-Resources Corporation: *See—*
Schweis, Robert W., 3,685,673.

Csakvary, Oscar: *See—*
Jureit, John Calvin; Csakvary, Oscar; and Castillo, Adolfo, 3,685,129.

Culkowski, Edwin M.; Gore, Donald B.; and Kassay, Andrew W., to Allied Chemical Corporation. Process for preparing amino aldehyde molding compositions. 3,686,105, Cl. 260-17.300.

Culligan, Robert L., to Xerox Corporation. Photoelectrophoretic apparatus using pyramid gears. 3,685,897, Cl. 355-300.000.

Cummings, Paul Gene, to General Electric Company. Method and apparatus for starting a large inertia dynamoelectric machine. 3,686,550, Cl. 318-148.000.

Cunningham, Arthur L., to Sherwin-Williams Company, The. Condensed linear polyesters and coatings containing same. 3,686,360, Cl. 260-850.000.

Cunningham, Cecil R. Deep fat fryer assembly. 3,685,433, Cl. 99-408.000.

Cupples, Barrett L.: *See—*
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,285.
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,286.

Cupples, Barrett L.; Murphy, Clarence R.; and Walsh, William L., to Gulf Research & Development Company. Separation of dry HBr from a dilute aqueous solution of HBr. 3,686,076, Cl. 203-12.000.

Currier, Jonathan E.; and Williams, Donald B. Machine for automatically feeding, cover applying, sealing, and trimming, filled packages. 3,685,254, Cl. 53-329.000.

Curtess, Joan. Prefabricated building structure. 3,685,222, Cl. 52-90.000.

Curtis Instruments, Inc.: *See—*
Beusman, Curtis C., 3,686,566.

Cuscovitch, John F., Sr. Carpet tool. 3,685,064, Cl. 7-17.000.

Cuvelier, Georges; and Wattiez, Daniel, to Institut Textile de France. Dry heat reaction of quaternized epoxides and quaternized chlorohydrins with hydroxylated textiles. 3,685,953, Cl. 8-115.000.

Cyphelly, Ivan Jaroslav. Hydrostatic shaft seal. 3,685,842, Cl. 277-74.000.

Czuszak, Charles C.; and Worthen, Richard A., to Carrier Corporation. Trip mechanism for turbine trip valve. 3,685,791, Cl. 251-69.000.

Dahlgren, Lennart G. O., to Victor, Fritz Gasselblad Teckn. Curtain for camera shutters. 3,685,423, Cl. 95-57.000.

Dahlquist, Ralph L.; and Jones, James L., to Applied Research Laboratories, Inc. Capillary arc plasma source for and method of spectrochemical analysis. 3,685,911, Cl. 356-86.000.

Dai Nippon Insatu Kabushiki Kaisha: *See—*
Matsumaga, Kenji; Horiuchi, Michio; and Suzuki, Takao, 3,685,413.

Daimler Benz Aktiengesellschaft: *See—*
Hoch, Manfred, 3,685,399.

Daimler-Benz Aktiengesellschaft: *See—*
Lamm, Heinz, 3,685,922.

Dale Electronics, Inc.: *See—*
Cannon, Richard L.; and Smith, Leonard, R. D., 3,685,383.

Danfoss A/S: *See—*
Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, 3,685,927.

Daniels, Dennis, to U.S. Amada, Ltd. Multi-track turret and overload protection. 3,685,380, Cl. 83-552.000.

Dann, Bert H., to International Video Corporation. Voltage controlled oscillator having two phase shifting feedback part. 3,686,587, Cl. 331-117.00r.

Danree, Bernard: *See—*
Malen, Charles; Danree, Bernard; and Poscaud, Xavier, 3,686,190.

Dasy Inter S.A.: *See—*
Bostrom, Sten L., 3,686,659.
Bostrom, Sten L., 33,686,659.

Daugirda, Paul G., to Rheim Manufacturing Company. Fluid heater bypass tee. 3,685,542, Cl. 137-599.100.

David, Harry: *See—*
Rudszinat, Willy; and David, Harry, 3,685,633.

Davidson, Eugene M., to Hudson Products Corporation, mesne. Axial flow fans. 3,685,332, Cl. 72-216.000.

Davidson, William E., to General Electric Company. Adjustable sprayer iron. 3,685,180, Cl. 38-77.500.

Davidson, William E.; Walker, Wendell C.; and Foster, Harold S., to General Electric Company. Adjustable manual spray iron. 3,685,181, Cl. 38-77.500.

Davidson, William E.; and Walker, Wendell C., to General Electric Company. Steam and spray iron. 3,685,182, Cl. 38-77.300.

Davis, Billy D.; and Jones, Elvis E., to Dow Chemical Company, The. Polyurethane foams of organic polyisocyanates and polyols derived from alkylene diamines and novolac resins and method of making same. 3,686,101, Cl. 260-2.5aq.

Davis, Leonard P.; and Elliott, Robert M., to Kimberly-Clark Corporation. Apparatus for continuous molding sheet material. 3,685,930, Cl. 425-71.000.

Davis, William; and Stevenson, Moses. Coin-operated safety latch for phone booths and the like. 3,685,627, Cl. 194-32.000.

Davis, William B.: *See—*
Grunig, James K.; Davis, William B.; and Aitkenhead, William C., 3,685,961.

Dawson, Gordon Bertram, to Dowty Meco Limited. Chain conveyor drive sprocket assemblies. 3,685,367, Cl. 74-243.00c.

Dawson, Jack S., to Dawson-Yager, Inc. Vehicle washing system. 3,685,079, Cl. 15-21.00d.
Dawson-Yager, Inc.: *See—*
Dawson, Jack S., 3,685,079.
Day, John J.; and Hirschman, Paul S., to Ocean Protein Corporation. Method of and tank for hatching crustacea. 3,685,489, Cl. 119-2.000.
De Baun, Kenneth W., to Air Monitor Corporation. Air monitoring system. 3,685,355, Cl. 73-212.000.
De Feo, Richard J., Jr.: *See—*
Bearden, Roby, Jr.; and De Feo, Richard J., Jr., 3,686,343.
De Haas, Hans: *See—*
Dobbener, Raymond; and De Haas, Hans, 3,685,985.
De Koning, Hendrik, to Stamicarbon N. V. Process and apparatus for separating liquids. 3,686,077, Cl. 203-40.000.
De Laval Turbine Inc.: *See—*
Thoma, Frederic A., 3,685,368.
De Pasquale, Louis, to Visual Environments, Inc. Apparatus for controlling plural electrically actuated operating devices. 3,686,505, Cl. 250-208.000.
De Pierre, Robert J., to Kalamazoo Manufacturing Company. Dolly for handling large wheels as for aircraft. 3,685,125, Cl. 29-252.000.
De Vries, Douwe, to Shell Oil Company. Dual zone completion system. 3,685,580, Cl. 166-.500.
De Witt, Walter Groesbeck, III; and Hurwitz, Marvin Joseph. Terephthalic acid /1,2-propylene glycol polyester modifiers for polyvinyl chloride compositions. 3,686,361, Cl. 260-873.000.
Dean, Johnny C.; and Colling, Philip M., to Petro-Tex Corporaton. Oxidative dehydrogenation of organic compounds. 3,686,347, Cl. 260-680.00e.
Decker, Robert M.; Patena, Michael D.; and White, Thomas G. Fault locating system for electrical circuits. 3,686,531, Cl. 317-27.00r.
Dee, Colin William, to Horstmann Gear Company Limited, The. Bearing member. 3,685,875, Cl. 308-9.000.
Deffner, John F., to Gulf Research & Development Company. 2,6,7-Trioxabicyclo[2.2.2]octane compounds. 3,686,224, Cl. 260-340.700.
Deguchi, Masahiro; and Yano, Osahiko, to Matsushita Electric Industrial Co., Ltd. Running-speed control system for magnetic recording medium. 3,686,432, Cl. 178-6.60p.
Dekeyser, Lucien, to Bennes Marrel. Gas turbine with variable blade distribution. 3,685,921, Cl. 415-159.000.
Del Ponti, John D.: *See—*
Dorazio, Michael P., 3,685,825.
Del Vesco, Adriano: *See—*
Carraro, Giorgio; Del Vesco, Adriano; and Olindo, Santino, 3,686,299.
Delberghe, Jean Henri, to Bunker-Ramo Corporation, The. Carding arrangement for deep pile knitting machines. 3,685,315, Cl. 66-9.00b.
Delcron Products, Inc.: *See—*
Chernack, Milton P., 3,685,520.
Dema, Joseph. Tissue box bracket. 3,685,777, Cl. 248-205.000.
Demin, Alexandr Ivanovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.
Deming, Andrew F., to Alliance Manufacturing Company, Inc., The. High resistance rotor, motor and method. 3,685,142, Cl. 29-598.000.
Denel, Jean; Krebs, Jean-Pierre; and Santa-Maria, Enrique, to Compagnie Generale d'Electricite. Super conductive element switch. 3,686,458, Cl. 200-166.00c.
Dennewitz, Rolf Dieter, to Loewe Opta GmbH. Apparatus for regulating the light energy decay characteristic of a pulsed flash device. 3,685,409, Cl. 95-11.00r.
Dennison Manufacturing Company: *See—*
Heller, Harold M., 3,685,648.
Denny, William M.: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.
Denton, Bryce A., to General Electric Company. Method for gravity pressure permanent molding. 3,685,569, Cl. 164-120.000.
DePalma, Ted V.; Brons, Albert J.; and Perga, Martin W. Catalytic converter construction. 3,685,972, Cl. 23-288.00f.
Derby-Anstalt: *See—*
Erne, Hansjorg; and Halma, Laszlo, 3,685,692.
DeStevens, George: *See—*
Dickel, Daniel Frederick; and DeStevens, George, 3,686,211.
Deumens, Johannes J. M.: *See—*
Groen, Siemen H.; and Deumens, Johannes J. M., 3,686,262.
Deutsch, Fritz A., to Addressograph-Multigraph Corporation. Sheet distributing device. 3,685,819, Cl. 270-58.000.
Deutsche Gold- und Silber-Scheideanstalt vormal Roessler: *See—*
Haschke, Heinz; and Bader, Erich, 3,686,145.
Deutsche Gold- und Silber-Scheidenstalt vormals Roessler: *See—*
Posselt, Klaus; and Thiele, Kurt, 3,686,206.
Deve, Vagn, to Combustion Engineering, Inc. Thermal sand reclamation unit. 3,685,165, Cl. 34-57.00a.
Dewan, Shashi Bhushan: *See—*
Havas, George; and Dewan, Shashi Bhushan, 3,686,558.
Di Salvo, Salvatore; and Collazuol, Mario, to Fiat Societa per Azioni. Adjustable headlamp. 3,686,497, Cl. 240-61.800.
Dickel, Daniel Frederick; and DeStevens, George, to Ciba Corporation. Indolylalkanoic acid lactones. 3,686,211, Cl. 260-326.14r.
Dickore, Karlfried; Wegler, Richard; and Hermann, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. 1,2,4-Triazolyliminodithiocarbonic acid esters. 3,686,201, Cl. 260-308.00r.
Dicks, Peter D. J.; and Hill, William M., to Spraymould Limited. Method of making shoes. 3,685,071, Cl. 12-146.00c.
Diddams, Donald Guy; and Renaud, Norman Ernest, to Sterling Drug, Inc. Process for purifying vanillin. 3,686,322, Cl. 260-600.000.
Didier-Werke A. G.: *See—*
Fehling, Hans Reinhard, 3,685,706.
Dieckmann, John Jacob: *See—*
Amos, Charles William; Johnson, Maynard Dale; and Dieckmann, John Jacob, 3,685,329.
Dieffenbachen, J., Maschinenfabrik, GmbH: *See—*
Pfeiffer, Heinrich, 3,685,932.
Diegelman, Frederick Henry, to Bethlehem Steel Corporation. Spraying device. 3,685,736, Cl. 239-118.000.
Diehl, Philip A., to Packaging Corporation of America. Package construction. 3,685,649, Cl. 206-78.00b.
Dieterich, Dieter: *See—*
Reiff, Helmut; and Dieterich, Dieter, 3,686,108.
Schafer, Karl; Reischl, Artur; Reich, Friedrich; and Dieterich, Dieter, 3,686,026.
Dietrich, Walter E., to Baldwin, D. H., Company. Pivot pin bearing for use in plastic piano actions and the like. 3,685,876, Cl. 308-37.000.
Dietze, Wolfgang, to Siemens Aktiengesellschaft. Separation of the deposition mandrel from a vapor phase deposited semiconductor body. 3,686,378, Cl. 264-81.000.
Dills, Raymond L.; and Dooley, James A., to General Electric Company. Mounting system for solid plate surface heating units. 3,686,477, Cl. 219-462.000.
Dischert, William Arnold, to RCA Corporation. Sheet metal waveguide constructed of a pair of interlocking sheet metal channels. 3,686,590, Cl. 333-24.100.
Diva Cars Limited, t/a: *See—*
Samuel, Jon Michael Glen; and Rawlings, James Earl, 3,686,051.
Diva Cars Limited; t/A Enfield Automotive: *See—*
Faul, Thomas L.; and Young, Richard G., 36,886,675.
Dobbener, Raymond; and De Haas, Hans, to Duisburger Kupferhutte. Method for the removal of impurities from metallic zinc. 3,685,985, Cl. 75-86.000.
Dobbs, David John Miller: *See—*
Ogilvy, Harry Heggie; Tuck, Elizabeth Margaret; Dobbs, David John Miller; and Rosser, John Anthony, 3,685,454.
Dobbs, Harriette E.: *See—*
Dobbs, Richard H., 3,685,363.
Dobbs, Richard H., to Dobbs, Harriette E. Drive mechanism. 3,685,363, Cl. 74-31.000.
Dock, Mortimer Russell, to The H-2-O Filter Corporation. Cigerette holder containing activated carbon and frangible capsules. 3,685,521, Cl. 131-187.000.
Docutel Corporation: *See—*
Karecki, Marion R.; Chastain George R.; and Barnes, Thomas R., 3,685,690.
Doerter, Randall H., to Textron Inc. Method and apparatus for gapping and cleaning slide fastener chain. 3,685,130, Cl. 29-408.000.
Doherty, Henry. Means for collecting a dog's excrement by the dog's owner or walker. 3,685,088, Cl. 15-257.600.
Dom, Harry A.: *See—*
McClellan, Herbert L.; Dom, Harry A.; and Wisebaker, Robert E., 3,685,070.
Domnick, Arno. Assemblies of inter-linked pre-fabricated members for forming a path. 3,685,403, Cl. 94-13.000.
Domres, Hans Georg; Simons, Emil; and Gillhaus, Horst, to Brown, Boveri & Cie, AG. Movable casting apparatus. 3,685,573, Cl. 164-335.000.
Donald, Harold J.: *See—*
Walles, Wilhelm E.; Caiola, Robert J.; and Donald, Harold J., 3,685,446.
Donalies, Daniel J., to Xerox Corporation. Fluidized development apparatus. 3,685,486, Cl. 118-637.000.
Donnelly, William R., to Readi-Temp Inc. Heat transfer unit. 3,685,507, Cl. 126-263.000.
Dooley, James A.: *See—*
Dills, Raymond L.; and Dooley, James A., 3,686,477.
Dooley, James L., to McCulloch Corporation. Re entry type integrated gas turbine engine and method of operation. 3,685,287, Cl. 60-39.020.
Doose, Conrad, to Kernforschungsanlage Julch G.m.b.H. Cryogenic conduit assembly for conduction electricity. 3,686,422, Cl. 174-15.00c.
Doose, Conrad; and Sassin, Wolfgang, to Kernforschungsanlage Julich G.m.b.H. Method of cooling long distance low temperature electric conductor. 3,686,423, Cl. 174-15.00c.
Dorazio, Michael P., 25% to Del Ponti, John D. Balloon bursting game apparatus. 3,685,825, Cl. 273-1.00r.
Dow Chemical Company, The: *See—*
Bertram, James L., 3,686,358.
Chang, Kuo Yuan, 3,686,337.
Davis, Billy D.; and Jones, Elvis E., 3,686,101.
Dunn, James L., Jr.; and Liddel, Harold G., 3,685,959.
Harrison, Hugh T.; and Goodwin, Korwin J., 3,686,008.
Jones, Giffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,686,279.

Karle, Franklin J.; and Langer, Horst G., 3,685,344.
Kressley, Leonard J., 3,685,262.
Layne, Gilbert S.; and Huml, James O., 3,685,984.
Lindblom, Robert O.; and Ledbetter, Harvey D., 3,686,018.
Miller, Gordon R., 3,686,047.
Nankee, Robert J.; Lamphere, Jack C.; and Nelson, Rodney A., 3,686,024.
Walles, Wilhelm E.; Caiola, Robert J.; and Donald, Harold J., 3,685,446.

Dow Corning Corporation: *See—*
Saam, John C., 3,686,356.

Dow-Unquinesa S.A.: *See—*
Solomka, Monroe M.; and Montoya, Jose M. Genua, 3,686,010.

Dowling, Thomas P., to Commercial Solvents Corporation. Explosive booster. 3,685,449, Cl. 102-24.000.

Dowty Meco Limited: *See—*
Dawson, Gordon Bertram, 3,685,367.

Doyle, Gerald. Olefin disproportionation. 3,686,136, Cl. 252-429.00b.

Dresser Industries, Inc.: *See—*
Henry, Ralph E., 3,685,840.

Drieze, Hieronimus Robert. Container with a fixed number of elements. 3,685,201, Cl. 46-26.000.

Drummond, Warren W., to PPG Industries, Inc. Glass fiber forming and supply package. 3,685,764, Cl. 242-129.000.

Du Pont de Nemours, E. I., and Company: *See—*
Balthis, Joseph H., Jr., 3,686,031.
Bowman, John Michael, 3,686,143.
Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, 3,686,023.
Garth, Bruce H., 3,686,038.
Hagman, John F., 3,686,156.
Hawkins, William E., 3,686,374.
Hays, Richard Young, 3,686,377.
Khan, Ausat Ali, 3,686,154.
Knowles, Richard N., 3,686,303.
Knowles, Richard N.; and Arthur, Wilfred J., 3,686,415.
Moore, Earl Phillip, 3,686,336.
Pedersen, Charles John, 3,686,225.
Slockett, Robert Donald, 3,686,276.
West, William A., 3,686,009.
Williams, Joseph Blair, 3,686,067.

Du Pont de Nemours, E. I., and Company, mesne: *See—*
Cothran, Samuel Bynum; and Henry, Colin Alexander, 3,685,644.

Dube, Milford J.; and Semrow, Robert A., to Ney, J. M., Company, The. Slip ring assembly. 3,686,514, Cl. 310-232.000.

Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., to Texas Instruments, Incorporated. Electrical contact having a head sink layer. 3,686,457, Cl. 200-166.00c.

Duisburger Kupferhutte: *See—*
Dobbener, Raymond; and De Haas, Hans, 3,685,985.

Dumire, Leo G.: *See—*
Nevin, John J.; and Dumire, Leo G., 3,685,147.

Dunham-Bush, Inc.: *See—*
Amos, Charles William; Johnson, Maynard Dale; and Dieckmann, John Jacob, 3,685,329.

Dunkerley, James B.: *See—*
Mahaffy, Reid A.; Dunkerley, James B.; and Posta, Joseph M., 3,685,251.

Dunn, Howard E., to Phillips Petroleum Company. Catalytic dimerization of olefins with cobalt complexes. 3,686,353, Cl. 260-683.15d.

Dunn, James L., Jr.; and Liddel, Harold G., to Dow Chemical Company, The. Wood seasoning and modification. 3,685,959, Cl. 21-7.000.

Durdin, Lewis H.: *See—*
Wunsche, Edgar; Turner, Alfred H.; and Durdin, Lewis H., 3,686,421.

Durkee, John E., to Thomas Industries, Inc. Fire and burglar alarm system. 3,686,668, Cl. 340-420.000.

Durrum Chemical Corporation: *See—*
Benson, James R., 3,686,118.

Duvvuri, Tirumalesa, to Rohr Corporation. Duct with lining of spaced bands for suppressing sound in gas stream transmitted therethrough. 3,685,611, Cl. 181-33.00h.

Duyfjes, Werner; and Maas, Willem, to North American Philips Co., Inc. Pesticidal composition and method of preparing same. 3,686,419, Cl. 424-356.000.

Duyverman, Coenraad J., to Stamicarbon N.V. Process for preparing unsaturated alcohols. 3,686,333, Cl. 260-638.00b.

Dykzeul, Theodore J.: *See—*
Caparone, Michael J.; Dykzeul, Theodore J.; Lynwood, Edward B.; and Braucksick, Henry C., 3,685,541.

Dynamic Tools Ltd.: *See—*
Grante, Ralph; and Andre, Byron, 3,685,151.

Dynamics Corporation of America: *See—*
Kelly, Edward T.; and McClain, Keith D., 3,685,428.

Dyshkant, Viktor Fedorovich: *See—*
Niskovskikh, Vitaly Maximovich; Dyshkant, Viktor Fedorovich; and Kuznetsov, Leonid Georgievich, 3,685,571.

Dyson, Norman H., to Syntex Corporation. Preparation of optical isomers of arylalkylacetic acids. 3,686,183, Cl. 260-284.000.

E-C Corporation: *See—*
Pfenning, Dwight B.; and Brown, Robert L., 3,686,090.

Earles, Claude W.: *See—*
Keller, Arthur E.; and Earles, Claude W., 3,686,628.

Early, James R.; Eyring, William M.; McGrath, Donald W.; and Takenaka, Toshio, to Garrett Corporation, The. Method of brazing. 3,685,139, Cl. 29-498.000.

Eastman Kodak Company: *See—*
Ettischer, Helmut, 3,685,408.
Kellogg, Lillian M.; and Liebert, Nancy B., 3,685,997.

Ebeling, Dorothy Stott, executrix: *See—*
Ebeling, William C., 3,686,435.

Ebeling, William C.; deceased (by Ebeling, Dorothy Stott, executrix), to Singer Company, The, mesne. Apparent altitude changes in television model visual system. 3,686,435, Cl. 178-6.800.

Eberly, Paul E., Jr., to Esso Research and Engineering Company. Process for aromatization of olefin hydrocarbons. 3,686,341, Cl. 260-673.500.

Eberly, Paul E., Jr., to Esso Research and Engineering Company. Process for isomerization of normal paraffinic hydrocarbons. 3,686,348, Cl. 260-683.700.

Eckdahl, Thomas Harold, to Plastics, Inc. Horizontally stackable tray. 3,685,687, Cl. 220-97.00r.

Ecological Controls, Inc.: *See—*
Adams, Jack C., 3,685,946.

Edgren, Jack C.: *See—*
Huber, Hugh Dana; and Edgren, Jack C., 3,685,934.

Edwards, David V. Liferaft inflation system. 3,685,066, Cl. 9-11.00a.

Edwards, John A.: *See—*
Henrick, Clive A.; Edwards, John A.; and Fried, John H., 3,686,215.

Edwards, Robert S.: *See—*
Bigdon, Orville W.; Edwards, Robert S.; and Powers, William J., III, 3,686,243.

Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, to Du Pont de Nemours, E. I., and Company. Spray system method for producing visually reproducible coating on substrates. 3,686,023, Cl. 117-105.300.

Egami, Harutoshi: *See—*
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, 3,686,122.

Egerer, Josef, to Staedtler & Uhl Schwabach. Needle strips for combing and like machines. 3,685,101, Cl. 19-129.00r.

Eggert, Walter S., Jr., to Budd Company, The. Bolster assembly. 3,685,796, Cl. 254-7.00r.

Eglen Hovercraft, Inc.: *See—*
Eglen, Jan A., 3,685,607.

Eglen, Jan A., to Eglen Hovercraft, Inc. Air support vehicle. 3,685,607, Cl. 180-117.000.

Ehlscheid, Gunter. Envelope-making machine. 3,685,402, Cl. 93-61.00r.

Ehm, Karl: *See—*
Ehm, Karl; and Vollmecke, Hermann (said Vollmecke assor to said), 3,685,378.

Ehm, Karl; and Vollmecke, Hermann, said Vollmecke assor to said Ehm, Karl. Apparatus for the cutting of elongated members. 3,685,378, Cl. 83-411.000.

Eholser, Ulrich: *See—*
Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,686,401.

Eholzer, Ulrich: *See—*
Ley, Kurt; Eholzer, Ulrich; and Seng, Florin, 3,686,181.

Eicher, Gerald H.: *See—*
Wolfe, Denis G.; and Eicher, Gerald H., 3,685,729.

Eindeisen, Kurt; and Frohberger, Paul-Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Substituted halo pyrazolinones fungicidal agents. 3,686,410, Cl. 424-273.000.

Eisenan, Fred S., Jr.; Schenck, Leslie Millard; and Beiswanger, John P. G., to GAF Corporation. Phosphonamide antistatic agents. 3,686,368, Cl. 260-945.000.

Electro-Nite Engineering Co.: *See—*
Boron, Joseph; and Lowdermilk, Marvin J., 3,685,359.

Electrohome Limited: *See—*
Kleeger, Allan A., 3,686,582.

Elias, Laurence F.; and Magee, James H., to Leeds & Northrup Company. Digital function generator. 3,686,665, Cl. 340-347.0ad.

Elliott, Joseph E.; and International Business Machines Corporation, to Compressed coding of digitized quantities. . 3,686,631, Cl. 340-146.03h.

Elliott, Robert M.: *See—*
Davis, Leonard P.; and Elliott, Robert M., 3,685,930.

Ellis, James B.: *See—*
Lux, George K.; Ellis, James B.; and Schulze, John J., 3,685,894.

Ellis, Willard H.: *See—*
Bokros, Jack C.; and Ellis, Willard H., 3,685,059.

Emgeler, William E., to General Electric Company. Short channel field-effect transistors. 3,685,140, Cl. 29-571.000.

EMI Limited: *See—*
Jackson, Brian; and Barrett, John Eric, 3,686,588.

Emile, Billy; and Meudon, Jean, to Etablissements J. J. Carnaud & Forges de Basse-Indre. End for easy opening can. 3,685,683, Cl. 220-54.000.

Encke, Robert B., to Cherry-Burrell Corporation. Metering device. 3,685,554, Cl. 141-59.000.

Enfield Automotive: *See—*
Samuel, Jon Michael Glen; and Rawlings, James Earl, 3,686,051.

Engbretson, Gerald C.: *See—*
Clark, Harold V.; and Engbretson, Gerald C., 3,686,469.

Engel, Thomas Paul. Injection moulding apparatus with dynamic impact injection assist means and control therefor. 3,685,937, Cl. 425-167.000.

Engelhard, Bruno: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.

Enshu Limited: *See—*
Sakamoto, Toemon, 3,685,553.

Environeering, Inc.: *See—*
McIlvaine, Robert L.; and Kent, Roger E., 3,685,261.

Epiard, Eugene Jean Robert, to Societe dite: Compagnie Industrielle des Bracelet C.I.B. (Societe Anonyme). Clip for watch bracelet. 3,685,107, Cl. 24-241.00s.

Erdolchemie Gesellschaft mit beschrankter Haftung: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.

Erhard, Rune Torsten Isidor, to Aktiebolaget Bofors. Method and system for establishing a correct lead when firing at a moving target. 3,685,159, Cl. 33-49.00b.

Erickson, Gerald. Container having registering means, carrier therefor and package thereof. 3,685,647, Cl. 206-65.00e.

Erlandson, Paul M., to Continental Can Company, Inc. Article having surface treatment for welding. 3,686,462, Cl. 219-93.

Erne, Hansjorg; and Halma, Laszlo, to Derby-Anstalt. Automatic beverage dispenser with key control. 3,685,692, Cl. 222-23.000.

Erwin, Ronald L., 25% to Harter, Bernard Gerald. Measuring dispenser. 3,685,702, Cl. 222-305.000.

ESB Incorporated: *See—*
Malchman, Franklin L.; and Radoi, William J., 3,686,634.

Eschemco Corporation, mesne: *See—*
Hein, Richard W.; and Bruson, Herman A., 3,686,297.

Esco Corporation: *See—*
Hahn, Frederick C.; and Miller, Ronald R., 3,685,177.

Espy, Herbert H.: *See—*
Aldrich, Paul H.; Bartell, Don G.; and Espy, Herbert H., 3,686,109.

Essex International Inc.: *See—*
Hansen, Wallace A., 3,686,609.
McCardell, Willard B., Jr.; Bissland, John D.; and Witek, Roman J., Jr, 3,686,619.
Preston, Jerome A., 3,686,030.

Esso Research and Engineering Company: *See—*
Bearden, Roby, Jr.; and De Feo, Richard J., Jr., 3,686,343.
Britton, Robert A., 3,686,334.
Eberly, Paul E., Jr., 3,686,341.
Eberly, Paul E., Jr., 3,686,348.
Kimberlin, Charles N., Jr.; and Gladrow, Elroy M., 3,686,121.
Maravetz Lester L., 3,686,230.
Marks, Alfred F., 3,686,244.
Neal, Arthur H.; and Parker, Paul T., 3,686,352.
Oswald, Alexis; Hall, Daniel N.; and Griesbalm, Karl, 3,686,326.

Etablissements J. J. Carnaud & Forges de Basse-Indre: *See—*
Emile, Billy; and Meudon, Jean, 3,685,683.

Etablissements Pain-Bourgeas: *See—*
Matas, Gabalda Carlos, 3,685,269.

Ethyl Corporation: *See—*
Lanier, Carroll W., 3,686,250.
Nelson, Gunner E., 3,686,248.

Ettischer, Helmut, to Eastman Kodak Company. Shutter control apparatus for photographic cameras. 3,685,408, Cl. 95-10.00c.

Eue, Ludwig: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,686,198.
Munz, Ferdinand; Hack, Helmuth; and Eue, Ludwig, 3,686,204.

Everett, Peter G., to Zenith Radio Corporation. Solid-state, acoustic-wave amplifiers. 3,686,579, Cl. 330-5.500.

Evgeev, Dmitry Petrovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Eyring, William M.: *See—*
Early, James R.; Eyring, William M.; McGrath, Donald W.; and Takenaka, Toshio, 3,685,139.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,685,588.

Fadden, William J., Jr. Pollution free electric power and water producing station utilizing the kinetic and potential energy of water wind waves. 3,685,291, Cl. 60-57.00t.

Fahey, Darryl R., to Phillips Petroleum Company. Halo(haloorgano)bis(triorganophosphine) nickel(11) complexes for olefin dimerization. 3,686,245, Cl. 260-439.000.

Fairbanks, Theodore H., to FMC Corporation. Method for making net structures. 3,686,380, Cl. 264-103.000.

Fairbanks, Theodore H., to FMC Corporation. Method for making net structures. 3,686,381, Cl. 264-103.000.

Fairbanks, Theodore H., to FMC Corporation. Method for making net-like structures of curved construction. 3,686,382, Cl. 264-103.000.

Fairleigh, Kenneth F. Game instructional apparatus. 3,685,170, Cl. 35-29.00r.

Falvert, Daniel; Giralt, Georges; Clot, Jean; and Authie, Gerard, to Compagnie Generale D-Automatisme. Method and device for simulating traffic. 3,686,492, Cl. 235-184.000.

Farbenfabriken Bayer Akteingesellschaft: *See—*
Schwochow, Friedrich; Heinze, Gerhard; and Weber, Horst, 3,685,963.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Dickore, Karlfried; Wegler, Richard; and Hermann, Gunther, 3,686,201.
Eindeisen, Kurt; and Frohberger, Paul-Ernst, 3,686,410.
Gilch, Heinz; and Schnell, Hermann, 3,686,266.
Gruber, Hermann; and Schmitz-Josten, 3,686,140.
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Bernhard; and Hausweiler, Arnold, 3,686,194.
Hoffmann, Hellmut; Scheinpflug, Hans; Kume, Toyohiko; and Yasui, Kazuomi, 3,686,369.
Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, 3,686,232.
Keberle, Wolfgang; Hornig, Heinz; and Sinn, Gustav, 3,686,387.
Ley, Kurt; Eholzer, Ulrich; and Seng, Florin, 3,686,181.
Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,686,401.
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,686,198.
Munz, Ferdinand; Hack, Helmuth; and Eue, Ludwig, 3,686,204.
Reiff, Helmut; and Dieterich, Dieter, 3,686,108.
Rosenkranz, Hans-Jurgen; Rudolph. Hans; and Heine, Hans-Georg, 3,686,084.
Schafer, Karl; Reischl, Artur; Reich, Friedrich; and Dieterich, Dieter, 3,686,026.
Scherzberg, Herbert, 3,685,276.
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.
Schrader, Gerhard; and Hermann, Gunther, 3,686,257.
Seng, Florin, 3,686,400.
Wollweber, Hartmund; Hiltmann, Rudolf; and Stendel, Wilhelm, 3,686,199.

Farbwerke Hoechst Aktiengesellschaft: *See—*
Otten, Joachim; and Schaeffer, Georg, 3,686,300.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Fester, Walter; Hanschke, Ernst; and Jakob, Franz, 3,686,148.
Gowecke, Siegfried, 3,686,103.
Hauptmann, Gerhard; and Weber, Erhard, 3,686,078.
Scherer, Otto; and Mildenberger, Hilmar, 3,686,200.

Farman, Charles E.: *See—*
Farman, Charles E.; Green, Thomas C.; Pepper, Hurley D.; and Slone, Samuel (said Green, said Pepper and said Slone assors. to), 3,686,115.

Farman, Charles E.; Green, Thomas C.; Pepper, Hurley D.; and Slone, Samuel, said Green, said Pepper and said Slone assors. to Farman, Charles E. Ultrasonic apparatus and method for the purification of fluids. 3,686,115, Cl. 210-19.000.

Fary, Robert Eaton. Putter training guide. 3,685,835, Cl. 273-192.000.

Fasco Industries, Inc.: *See—*
Hire, Charles John, 3,686,605.

Fastener Corporation: *See—*
Obergfell, Allen R., 3,685,396.

Fathauer, George H., to Zaring Industries, Inc. Speech scrambler. 3,686,571, Cl. 325-32.000.

Faul, Thomas L.; and Young, Richard G., to Faul-Coradi, Inc. Apparatus and method for drawing with a spot of radiant energy. 3,686,675, Cl. 346-100.000.

Faul, Thomas L.; and Young, Richard G., to Faul-Coradi, Inc. and Diva Cars Limited; t/A Enfield Automotive. Apparatus and method for drawing with a spot of radiant energy. 36,886,675, Cl. 346-100.000.

Faul-Coradi, Inc.: *See—*
Faul, Thomas L.; and Young, Richard G., 3,686,675.
Faul, Thomas L.; and Young, Richard G., 36,886,675.

Fechtig, Bruno: *See—*
Habermeier, Juergen; Batzer Hans; Porret, Daniel; Peter, Heinrich; and Fechtig, Bruno, 3,686,174.

Fedchenko, Feodosy Mikhailovich. Escapement drive for counting mechanisms. 3,685,277, Cl. 58-23.00d.

Fedor, Richard M. Gripping shaft. 3,685,757, Cl. 242-68.000.

Fedor, Richard M. Coil holder. 3,685,760, Cl. 242-78.700.

Fehling, Hans Reinhard, to Didier-Werke A. G. Rotary valve for metallurgical vessels and the like. 3,685,706, Cl. 222-531.000.

Fehrenbacher, Wolfgang, to KUNDO Kieninger & Obergefeli Fabrik fur Technische Laufwerke und Apparate. Manual setting mechanism for digital alarm clock. 3,685,280, Cl. 58-38.000.

Fein, Marvin M.: *See—*
Barabas, Eugene S.; and Fein, Marvin M., 3,686,150.

Feldman, Martin Louis: *See—*
Gordon, John Edson; and Feldman, Martin Louis, 3,686,233.

Fester, Walter; Hanschke, Ernst; and Jakob, Franz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Fiber-forming polyamides with an increased content of amino groups provided by a cycloaliphatic-aromatic polyamine. 3,686,148, Cl. 60-78.0tf.

Fiandt, Ronald Maynard, to Globe-Union Inc. Battery container heat sealing apparatus. 3,686,056, Cl. 156-499.000.

Fiat Societa Per Azione: *See—*
Torazza, Giovanni, 3,685,504.

Fiat Societa per Azioni: *See*—
Di Salvo, Salvatore; and Collazuol, Mario, 3,686,497.
Fichet-Bauche: *See*—
Gerard, Jean, 3,686,439.
Fick, Herbert, to Kalle Aktiengesellschaft. Apparatus for the after-treatment of exposed sheet material. 3,685,425, Cl. 95-89.00r.
Fike Metal Products Corporation: *See*—
Pugh, Robert E.; and Pritsche, Donald L., 3,685,587.
Fill Metro, to Canada Packers Limited. Loin puller. 3,685,095, Cl. 17-1.000.
Fincher, James R.: *See*—
Sale, Oliver H., Jr.; and Fincher, James R., 3,685,229.
Fink, Frank J., to Imperial Manufacturing and Engineering Company, The. Method of installing insert ring in pipe unions. 3,685,131, Cl. 29-417.000.
Finkmann, Hans-Ulrich: *See*—
Beckmann, Gunter; and Finkmann, Hans-Ulrich, 3,686,388.
Firestone Tire & Rubber Company, The: *See*—
Bouton, Thomas; and Futamura, Shingo, 3,686,158.
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Beckman, Joseph A., 3,686,345.
Firestone Tire and Rubber Company, The: *See*—
Beneze, Heinz Wilhelm, 3,686,389.
Fischer, Alfred; and Fraser, Irene A. E., to Tenneco Chemicals, Inc. Stable solutions of basic lead soaps. 3,686,012, Cl. 106-310.000.
Fischer, David; Kohler, Rudolf; Roos, Hugo; and Merker, Joachim, to Huller Rottenburg Gesellschaft mit beschrankter Haftung. Chucking device for machine tools. 3,685,845, Cl. 279-5.000.
Fischer, Harry C., to Allied Chemical Corporation. Open cycle ammonia refrigeration system including a catalytic ammonia burner. 3,685,310, Cl. 62-114.000.
Fischer, Horst: *See*—
Gereth, Reinhard; and Fischer, Horst, 3,686,036.
Fischer, John J.; and Sibley, John W., to Patterson-Kelley Co., Inc., The. Research blender. 3,685,805, Cl. 259-85.000.
Fischer, Stefan. Apparatus for the manufacture of hollow objects of thermoplastic material. 3,685,943, Cl. 425-326.000.
Fishcer & Porter Company: *See*—
Futamura, John, 3,686,557.
Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., to Merck & Co., Inc. 1-Oxybenzimidazoles. 3,686,110, Cl. 260-302.00h.
Fisher, Richard L.; Nestel, Stephan C.; and Niemi, John C. Coffered ceiling system. 3,685,238, Cl. 92-145.000.
Fisons Pharmaceuticals Limited: *See*—
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,686,320.
Fitton, John Talbot; and Sutton, Alan, to Simon Carves Limited. Apparatus for gaseous treatment of sized materials. 3,685,166, Cl. 34-168.000.
Fitzmaurice, Colin; and Lee, Thomas Brian, to Fisons Pharmaceuticals Limited. Bis-phenoxy compounds. 3,686,320, Cl. 260-592.000.
Fitzmaurice, Colin; and Lee, Thomas Brian. Compositions containing bio-chemical compounds for inhibiting antigen-antibody reactions. 3,686,412, Cl. 424-283.000.
Flangeklamp Corporation: *See*—
Lickliter, Robert Paul; and Reeves, John F., 3,685,230.
Flannelly, William G., to Kaman Aerospace Corporation. Flexible universal joint. 3,685,314, Cl. 64-12.000.
Fleiner, Sigmund: *See*—
Bosch, Ludwig; Fleiner, Sigmund; and Fleissner, Heinz, 3,685,323.
Fleissner, Gerold: *See*—
Fleissner, Heinz; and Fleissner, Gerold, 3,685,322.
Fleissner, Heinz: *See*—
Bosch, Ludwig; Fleiner, Sigmund; and Fleissner, Heinz, 3,685,323.
Fleissner, Heinz; and Fleissner, Gerold, to Anotalt fur Potentdienot. Device for the carbonization of wool. 3,685,322, Cl. 68-2.000.
Fletcher, John Vincent; and Martin, Dennis, to Burmah Oil Trading Limited. Production of percarboxylic acids. 3,686,289, Cl. 260-502.00r.
Fletcher, William E.; and Rosseay, Leon B., to Modicon Corporation. Digital computer-industrial controller system and apparatus. 3,686,639, Cl. 340-172.500.
Flexicon Electronics, Inc.: *See*—
Clements, John W., 3,686,612.
Flintkote Company, The: *See*—
Russell, Thomas E., 3,686,107.
Floessel, Carl-Dieter, to Aktiengesellschaft Brown, Boveri & Cie. Gas-blast circuit breaker. 3,686,453, Cl. 200-148.00b.
Fluid Chemical Company, Inc.: *See*—
Yuhas, Edward Richard, 3,685,695.
FMC Corporation: *See*—
Fairbanks, Theodore H., 3,686,380.
Fairbanks, Theodore H., 3,686,381.
Fairbanks, Theodore H., 3,686,382.
Gresham, John Thomas, 3,686,283.
Treitler, Theodore Leo, 3,685,964.
Folser, Karl: *See*—
Plasser, Franz; Theurer, Josef; and Folser, Karl, 3,685,589.
Fong, William: *See*—
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,686,553.
Fordertechnik Hamburg Harry Lassig: *See*—
Laosig, Harry; and Grosshauser, Anton, 3,685,233.
Foreman, Kenneth C. Track roller assembly. 3,685,871, Cl. 305-28.000.
Forsheda Gummifabrik AB: *See*—
Malmstrom, Sven Erik, 3,685,838.
Fortunato, Vincent, to Henschel-Steinau Company. Dump bin. 3,685,775, Cl. 248-174.000.
Foslien, Floyd L.; and Nelson, Terry N. Container seal. 3,685,681, Cl. 220-45.000.
Foster, Harold S.: *See*—
Davidson, William E.; Walker, Wendell C.; and Foster, Harold S., 3,685,181.
Foster, Harry C., to Hersey Products, Inc. Irrigating apparatus. 3,685,735, Cl. 239-109.000.
Foster, Newton C., to Westinghouse Electric Corporation. Bonding insulation material with half ester of an epoxy resin and unsaturated dicarboxylic acid anhydride composition. 3,686,045, Cl. 156-53.000.
Fouche, Yvon Pierre Jean: *See*—
Guilhem, Robert Germain; and Fouche, Yvon Pierre Jean, 3,686,572.
Fowler, John Hyde: *See*—
Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, 3,685,536.
Foy, George P. Attachment of belt buckles to belts. 3,685,057, Cl. 2-325.000.
Francis, William J., to Packagine Specialties, Inc. Pallet. 3,685,463, Cl. 108-56.000.
Frank Edge Saw Manufacturing Company: *See*—
Peck, Merrill V.; Thompson, Edwin P.; Thompson, William F.; and Peck, Robert M., 3,685,377.
Frankie, Thomas T.; and Pascoe, Larry B., to Rohr Corporation. Rivet center detector mechanism embodying gauge. 3,685,716, Cl. 227-1.000.
Franssen, Nico Valentinus, to U.S. Philips Corporation. Loudspeaker. 3,685,609, Cl. 181-31.00r.
Franz Plasser Bahnbaumaschinen Industrigesellschaft m.b.H.: *See*—
Plasser, Franz; and Praschl, Wilhelm, 3,685,157.
Fraser, Irene A. E.: *See*—
Fischer, Alfred; and Fraser, Irene A. E., 3,686,012.
Frederick, Robert E., to Link Engineering Company. Stator coil lacing machine. 3,685,470, Cl. 112-121.200.
Fredrikson, Bengt; Larsen, Stein; and Suvanto, Erkki. Means for casting. 3,685,570, Cl. 164-251.000.
Freed, Charles: *See*—
Javan, Ali; and Freed, Charles, 3,686,585.
Frei, Arno, to Sulzer Brothers, Ltd. Hydrostatic shaft seal. 3,685,839, Cl. 277-27.000.
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weisz, Michel, to Societe Trefimetaux G.P. Beryllium alloy. 3,685,988, Cl. 75-150.000.
Fresard, Marcel, to Mifirma S-A. Sewing machine. 3,685,473, Cl. 112-258.000.
Freud, Paul J.: *See*—
Hed, Aharon Zeev; and Freud, Paul J., 3,686,096.
Frey, Harry Robert, to RCA Corporation. Photographic method for printing a screen structure for a cathode-ray tube. 3,685,994, Cl. 96-36.100.
Frey, Karl A.; and Schliffke, Warner F., to Honeywell, Inc. Slider bearing surface generation. 3,685,216, Cl. 51-325.000.
Frey, Langdon T., III, to General Electric Company. Hermetic sealing system. 3,685,682, Cl. 220-46.00r.
Frick, Roy C.; Calvin, Victor E.; Sharpe, John C.; and Rowe, William Wallace, to Cincinnati Industries, Inc. Process for producing molded laminated articles. 3,686,054, Cl. 156-224.000.
Frick, Wilhelm Ernst; and Wenger, Thomas, to Geigy Corporation. Insecticidal composition and method containing 2-halogens-benzmidazole derivatives. 3,686,411, Cl. 424-273.000.
Fried, John H.: *See*—
Henrick, Clive A.; Edwards, John A.; and Fried, John H., 3,686,215.
Frisbee, Claude M., to Case, J. I., Company. Fluid cushioned dozer blade. 3,685,592, Cl. 178-801.000.
Frisch, Erling, to Westinghouse Electric Corporation. Means for retaining and handling reactor O-ring seals. 3,685,123, Cl. 29-239.000.
Frithjof, Carouge, to Joh. Vaillant KG. Circulating water heater. 3,685,733, Cl. 237-19.000.
Fritsche, Dieter: *See*—
Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,686,401.
Frohberger, Paul-Ernst: *See*—
Eindeisen, Kurt; and Frohberger, Paul-Ernst, 3,686,410.
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, to Opti-Holding AG. Method of making side-fastener stringers. 3,685,474, Cl. 112-265.000.
Frohlich, Karl. Pressure intensifier for windshield wipers. 3,685,086, Cl. 15-250.200.
Frosst, Charles E., & Co.: *See*—
Stuart, Ronald Stiles; and Wasson, Burton Kendall, 3,686,176.
Frost, Wade W., to Oxford Industries, Inc. Shirt packaging and tagging method and apparatus. 3,685,245, Cl. 53-14.000.
Fruhauf, Waldemar, to Krone GmbH. Sampling and holding system for analog signals. 3,686,577, Cl. 328-151.000.
Fry, William G.: *See*—

Kelly, Vincent J.; and Fry, William G., 3,685,999.
Frye, Kenneth G.; Lucas, Robert G.; and Rohosy, Soma M., to Beloit Corporation. Slitter blade mounting assembly. 3,685,379, Cl. 83-482.000.
Fry's (London) Limited: *See—*
Norfolk, Cyril Leslie, 3,685,373.
Fueling, David T.: *See—*
Turecek, Joseph L.; Craig, Glenn D.; and Fueling, David T., 3,685,364.
Fuji Photo Film Co., Ltd.: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,685,995.
Fujimoto, Kazumitsu: *See—*
Nakano, Sohta; Fujimoto, Kazumitsu; Otomo, Kazuhiro; Yokota, Toshiyuki; and Shindo, Hiroshi, 3,686,002.
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, to Takeda Chemical Industries, Ltd. Benzazocine derivatives. 3,686,167, Cl. 260-239.0bb.
Fujita, Masakazu: *See—*
Takizawa, Haruki; and Fujita, Masakazu, 3,685,765.
Fujitsu Limited: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.
Fujiwara, Watsuji. Large capacity steam trap. 3,685,731, Cl. 236-53.000.
Fukumi, Hirokazu: *See—*
Inoue, Goro; and Fukumi, Hirokazu, 3,686,260.
Fukushima, Osamu: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Fuller, Frank M., to Raymond International, Inc. Method for forming expanded base piles for uplift loads. 3,685,302, Cl. 61-53.600.
Funke, Robert, to Linde Aktiengesellschaft. Method of and apparatus for helically coiling pipe. 3,685,330, Cl. 72-137.000.
Furaeva, Ekaterina: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.
Furnival, Thomas J., to General Motors Corporation. Cold welded-ceramic semiconductor package. 3,686,540, Cl. 317-234.00r.
Furukawa, Hikaru: *See—*
Takeda, Ikuo; Suzuki, Takashi; and Furukawa, Hikaru, 3,686,581.
Fuse, Yuzo: *See—*
Naruse, Yohsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,686,525.
Futamura, John, to Fishcer & Porter Company. Floating-type electronic servo-motor process controller. 3,686,557, Cl. 318-599.000.
Futamura, Shingo: *See—*
Bouton, Thomas; and Futamura, Shingo, 3,686,158.
Gabor, William D., to Sanders Associates, Inc. High-speed synthesized field focus coil. 3,686,527, Cl. 315-31.00r.
Gach, Peter P.; and Leonard, Henry K., to Sunbeam Plastics Corporation. Double shell child-proof bottle cap. 3,685,676, Cl. 215-9.000.
Gadsby, Brian; Leeming, Peter Rodway; and Thomas, Michael Barrie, to Pfizer Inc. Thio derivatives of 2-hydroxy-3-naphthoic acid. 3,686,291, Cl. 260-516.000.
GAF Corporation: *See—*
Barabas, Eugene S.; and Fein, Marvin M., 3,686,150.
Eisenan, Fred S., Jr.; Schenck, Leslie Millard; and Beiswanger, John P. G., 3,686,368.
Gaines, Albert L., to Combustion Engineering, Inc. Bimetallic spacer grid. 3,686,071, Cl. 176-78.000.
Gaines, George L., Jr.; and Le Grand, Donald G., to General Electric Company. Shaped composition of polymer and surface modifying block copolymer additive and method. 3,686,355, Cl. 260-824.00r.
Gainesville Machine Company, Inc.: *See—*
Harben, Grover S., Jr., 3,685,096.
Galen, Joseph J., to Xerox Corporation. Ambipolar photoreceptor and method of imaging. 3,685,989, Cl. 96-1.0pc.
Gales, Richard J., to General Electric Company. Lampholder. 3,686,618, Cl. 339-53.000.
Gambale, James Richard; and Stone, Henry Asaph, III, to Tizon Chemical Corporation. Glass polishing compositions based on zircon and/ or zirconia and zirconium fluosulfate and polishing process using the same. 3,685,218, Cl. 51-283.000.
Games, Abram. Copying. 3,686,014, Cl. 117-1.700.
Gankin, Vtadimir Borisovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.
Gapp, Roland Howard; Alazraki, Marcos; and Harper, John, to Textron, Inc. Multimetal blind rivets and pulling stems. 3,685,391, Cl. 85-77.000.
Gardiner, Arthur Noel, to RCA Corporation. Method for manufacturing wire bonded integrated circuit devices. 3,685,137, Cl. 29-471.300.
Gardner, Ronald D.: *See—*
Smith, Joseph B.; and Gardner, Ronald D., 3,685,545.
Gardner, Willis W., to Borg-Warner Corporation. Bearing and lubrication means. 3,685,617, Cl. 184-6.280.
Garfein, Andre: *See—*
Rindner, Wilhelm; Iannini, Americo; and Garfein, Andre, 3,686,542.
Garfinkel, Jack. Method for making a wire splice. 3,685,148, Cl. 29-628.000.
Garnier, Michel; and Bigou, Jacques, to Societe Lannionaise d'Electronique. Mounting arrangement for integrated circuits heat sink. 3,686,533, Cl. 317-100.000.
Garnier, Robert C., Jr. Magnetic transducer having two core members of distinctly different magnetic field carrying characteristics. 3,686,468, Cl. 179-100.20c.
Garrett Corporation, The: *See—*
Early, James R.; Eyring, William M.; McGrath, Donald W.; and Takenaka, Toshio, 3,685,139.
Garshelis, Ivan J., to Research Associates, Inc. Method of packaging a plurality of disposable aprons and package resulting therefrom. 3,685,643, Cl. 206-57.000.
Garth, Bruce H., to Du Pont de Nemours, E. I., and Company. High energy density battery with trihydrocarbyl carbamate based electrolyte. 3,686,038, Cl. 136-100.00r.
Gatti, Anthony R., to Shell Oil Company. Sulfide precipitated catalysts. 3,686,137, Cl. 252-437.000.
Gauch, George J.: *See—*
Juodis, Alter; and Gauch, George J., 3,685,297.
Gay, Pierre Andre, to Compagnie des Atebiers et Forges de la Loire. Tension adjuster for slit metal sheets. 3,685,711, Cl. 226-191.000.
Geber, Eugene E., to Industra Products, Inc. Automatic tooling for in-slot winder. 3,685,119, Cl. 29-205.000.
Gebruder Junghans G.m.b.H., Firma: *See—*
Scholz, Gunther, 3,685,279.
Gebruder Seidel KG: *See—*
Ritzenhoff, Hermann, 3,685,678.
Geiger, Roy J.: *See—*
Anger, Ernest G.; Richards, Giles J.; Bloodgood, John F.; and Geiger, Roy J., 3,686,556.
Geigy Chemical Corporation: *See—*
Weis, Claud Dieter; and Rumpf, Jurg, 3,685,982.
Geigy Corporation: *See—*
Frick, Wilhelm Ernst; and Wenger, Thomas, 3,686,411.
Gelder, Franz. Arrangement for registering the presence and the availability of personnel. 3,686,482, Cl. 235-92.0ea.
General America Transportation Corporation: *See—*
Price, Albert E.; and Mansen, Robert L., 3,685,458.
General Descaling Company, Limited: *See—*
Jones, John Walter, 3,685,083.
General Electric Company: *See—*
Burge, Joseph C., 3,685,920.
Cook, Billy G., 3,685,092.
Craven, Harry J.; Hannahan, William F.; and Viscusi, James J., 3,685,931.
Cummings, Paul Gene, 3,686,550.
Davidson, William E., 3,685,180.
Davidson, William E.; Walker, Wendell C.; and Foster, Harold S., 3,685,181.
Davidson, William E.; and Walker, Wendell C., 3,685,182.
Denton, Bryce A., 3,685,569.
Dills, Raymond L.; and Dooley, James A., 3,686,477.
Emgeler, William E., 3,685,140.
Frey, Langdon T., III, 3,685,682.
Gaines, George L., Jr.; and Le Grand, Donald G., 3,686,355.
Gales, Richard J., 3,686,618.
Honda, Thomas Shaw, 3,685,501.
Lee, Daeyong, 3,686,041.
Livezey, John P.; and Rosser, Daniel B., 3,686,541.
Loyd, Raymond L., 3,685,427.
Otto, Charles W., 3,685,773.
Schmid, Hermann, 3,686,493.
Sexton, Charles W., Jr., 3,686,517.
Sobieski, John C., 3,685,880.
Talento, Joseph L., 3,686,456.
Welling, Leroy U. C., 3,686,547.
General Foods Corporation: *See—*
Lawrence, Norman F., 3,686,000.
General Mills, Inc.: *See—*
Christianson, George, 3,686,001.
General Motors Corporation: *See—*
Bassett, Arthur T., Jr., 3,685,311.
Blow, Robert H., Jr., 3,685,606.
Broyles, William R.; and Search, Robert L., 3,686,043.
Furnival, Thomas J., 3,686,540.
Holland, Joseph L., 3,685,528.
Hutchins, Everett C.; Spencer, Gary E.; and Tucker, Marion K., 3,685,923.
King, Michael F., 3,685,370.
Koivunen, Erkki A., 3,685,619.
Mikkola, John E., 3,686,475.
Rothschild, John J., 3,686,034.

Schauer, George W., Jr., 3,686,476.
Winebrener, Gary L., 3,686,549.

General Portland Cement Co.: *See—*
Hiatt, John C.; and Luker, John P., 3,686,372.

General Signal of Canada, Ltd.: *See—*
Schulz, Manfred, 3,686,667.

Georgia-Pacific Corporation: *See—*
Markham, Aaron E.; and Adolphson, Carl, 3,686,119.

Gepp, Carl E.: *See—*
Walbeck, Calvin; Jacoby, John M.; Gepp, Carl E.; and Robertson, Louis A., 3,685,450.

Gerard, Jean, to Fichet-Bauche. Telephone-line installaton for keeping a remote watch on premises. 3,686,439, Cl. 179-5.00r.

Gerard, Paul, to Agence Nationale de Valorisation de la Recherche tour Aurore. Method of centering a shaft in a bearing and hydrostatic bearing with high rigidity for carrying out this method. 3,685,874, Cl. 308-9.000.

Gerber Products Company: *See—*
Kelly, Vincent J.; and Fry, William G., 3,685,999.
Nelson, Lloyd A., 3,686,052.

Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina. Detegent. 3,686,099, Cl. 252-554.000.

Gereth, Reinhard; and Fischer, Horst, to Telefunken Patentverwertungsgesellschaft m.b.H. Solar cell with metal layered contact and method of manufacture. 3,686,036, Cl. 136-89.000.

Gerster, John F.: *See—*
Moore, George G. I.; Harrington, Joseph Kenneth; and Gerster, John F., 3,686,192.

Geshelin, Boris Mikhailovich; Maximov, Mikhail Mikhailovich; Rozenberg, Maxim Davidovich; and Yakovleva, Nadezhda Evgenievna, to Vsesojuzny Niftegazovy Nauchno-Issledovatelsky. Analogue computer for solution of non-linear boundary-value problem. 3,686,491,Cl. 235-185.000.

Gestler, David J.; Kovats, Zoltan; and Kolakowski, Alfred W., to Rockwell Manufacturing Company. Self generating remote reader register. 3,685,353, Cl. 73-194.00e.

Getgey, William F.; and Meth, Harry, to Rainbow Crafts, Inc. Blow gun having target mounted on its barrel. 3,685,828, Cl. 273-101.000.

Getz, Edward H., to Whirlpool Corporation. Motor speed control. 3,686,554, Cl. 318-321.000.

Gevaert-Agfa N.V.: *See—*
Stievenart, Emile Frans; Mees, Omer Jan; and Verelst, Johan Lodewijk, 3,685,420.

Geyer, Gerald R.: *See—*
Jones, Giffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,686,279.

Giaccone, Giuseppe, to RTV-Skf Officine di Villar Perosa S.p.A. Resilient bush. 3,685,772, Cl. 248-9.000.

Giachetti, Alfredo; Maranghi, Enzo; and Piericci, Angiolo, to Billi, G., & C. S.p.A. Device for tensioning stitches being formed in hosiery dual-bed flat machines. 3,685,317, Cl. 66-64.000.

Gifford, Maurice J.: *See—*
Seiferth, Oscar E.; Austin, Glenn M.; and Gifford, Maurice J., 3,685,717.

Gikow, Emanuel, to United States of America, Army. Anisotropic crystal circuit. 3,686,591, Cl. 333-70.000.

Gilbert, Dixie E., to Phillips Petroleum Company. Sealing parisons using preblow and contoured sealing surface. 3,686,379, Cl. 264-89.000.

Gilch, Heinz; and Schnell, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Esters of substituted phenoxyphthalic acids. 3,686,266, Cl. 260-465.00d.

Gillhaus, Horst: *See—*
Domres, Hans Georg; Simons, Emil; and Gillhaus, Horst, 3,685,573.

Gion, Leon, to Compagnie Generale d'Electro-Ceramique. Aluminous ceramic compositions with TiO_2 MnO_2 flux. 3,686,007, Cl. 106-46.000.

Giralt, Georges: *See—*
Falvert, Daniel; Giralt, Georges; Clot, Jean; and Authie, Gerard, 3,686,492.

Gish, Irving. Razor blade holder. 3,685,152, Cl. 30-296.000.

Givens, Wyatt W.; Caldwell, Richard L.; and Mills, William R., Jr., to Mobil Oil Corporation. In-situ assaying for uranium rock formations. 3,686,503, Cl. 250-83.100.

G.K. N. Group Services Limited: *See—*
Carver, Bryan George; and Crooks, Ronald, 3,685,572.

Gladrow, Elroy M.: *See—*
Kimberlin, Charles N., Jr.; and Gladrow, Elroy M., 3,686,121.

Glanzstoff AG: *See—*
Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, 3,686,328.

Glass, Marvin, & Associates: *See—*
Barlow, Gordon A., 3,685,829.
Morrison, Howard J., 3,685,202.

Gleim, Ralph A.; and Groom, Robert G., to Burroughs Corporation. Addressing system with means to check mechanical stability. 3,686,650, Cl. 340-174.150.

Glenn, Culler Jimmie: *See—*
Kirby, Herbert D.; Nearhoof, George L.; and Glenn, Culler Jimmie, 3,685,900.

Glider, Evgeny Khaimovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich, 3,686,522.

Globe-Union Inc.: *See—*
Fiandt, Ronald Maynard, 3,686,056.
Lubin, Irving, 3,686,139.

Glockner, Peter W.: *See—*
Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, 3,686,159.

Godelaine, Jozef Guido. Process for sterile filling of collyrium flasks and the like and apparatus for carrying out said process. 3,685,248, Cl. 53-37.000.

Goertzel, Gerald: *See—*
Abramson, Paul; and Goertzel, Gerald, 3,686,576.

Goff, Richard E.; and Schiappa, Antonio. Elastic and non-elastic narrow fabric and method and apparatus for manufacturing the same. 3,685,549, Cl. 139-24.000.

Goguta, Trian, to Uzina Rulmentul. Method and apparatus for manufacturing bearing rings. 3,685,339, Cl. 72-359.000.

Goldberg, Ira I.; Marasco, Paul M.; and Pfleger, Kenneth R., to United States of America, Army. Electronic ballistic computer circuit. 3,686,478, Cl. 235-61.50e.

Goldman, Joseph, to Logistics Industries Corporation. Distribution box. 3,685,719, Cl. 229-45.000.

Goldsmith, Ave S., to CCI Corporation. Load transfer dolly. 3,685,853, Cl. 280-81.00r.

Goldstone, Bertram J., to Raytheon Company. Real time serial fourier transformation circuit. 3,686,490, Cl. 235-156.000.

Gonzalez, Ricardo A., to Xerox Corporation. Paper flip control apparatus. 3,685,898, Cl. 355-3.000.

Good, Arthur L. Pneumatic fuel control system and method of operating the same. 3,685,945, Cl. 431-6.000.

Good, Paul J., to Minnesota Mining and Manufacturing Company. Spring-powered preloaded camera. 3,685,414, Cl. 95-31.0ac.

Goodgion, James C.; and Blossom, Armond L., to Coleman Company, Inc., The. Mobile home air heating and cooling system. 3,685,577, Cl. 165-48.000.

Gooding, Harley L., Jr., to Parker-Hannifin Corporation. Swivel fitting. 3,685,397, Cl. 92-106.000.

Goodman, Irving, to Haberman, Lee, mesne. Merchandising Display Facing. 3,685,186, Cl. 40-140.000.

Goodman, Robert C., to Texas Instruments, Incorporated. Partial oxidation of hydrocarbons. 3,685,977, Cl. 48-107.000.

Goodwin, Korwin J.: *See—*
Harrison, Hugh T.; and Goodwin, Korwin J., 3,686,008.

Goodyear Tire & Rubber Company, The: *See—*
Smithkey, John C., Jr., 3,685,564.

Goodyear Tire and Rubber Company, Inc.: *See—*
Johnson, Ernest D., 3,685,635.

Goossev, Constantin, to Ball Sphere Hinge Syndicate. Hings. 3,685,094, Cl. 16-149.000.

Gorden, Sherritt Mines Limited: *See—*
MacLellan, James A.; and Wilson, John E., 3,685,654.

Gordon, Dale I.; and Smart, Lee W., to Westinghouse Electric Corporation. Dynamoelectric machine apparatus, such as brushless exciter for A. C. generator, with flexible tape capacitive means. 3,686,523, Cl. 310-72.000.

Gordon, John Edson; and Feldman, Martin Louis, to American Cyanamid Company. Recovery and purification of methyl violet dyes. 3,686,233, Cl. 260-391.000.

Gordon, Keith M., to MPB Corporation. Bearing torque test instruments. 3,685,342, Cl. 73-9.000.

Gordon, Robert Wilmer: *See—*
Totten, Thomas Bernard; and Gordon, Robert Wilmer, 3,686,496.

Gore, Donald B.: *See—*
Culkowski, Edwin M.; Gore, Donald B.; and Kassay, Andrew W., 3,686,105.

Gorini, Edmondo. Method for manufacture of stocking toes. 3,685,320, Cl. 66-95.000.

Goto, Hachiro, to Teijin Limited. Thermoplastic polyurethanes for adhesives, coatings, and moldings. 3,686,146, Cl. 260-75.0np.

Gotoh, Tsuneyasu: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.

Gould, Robert J., to Barden Corporation, The. Ball cage. 3,685,877, Cl. 308-201.000.

Gowecke, Siegfried, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process of making epoxy cellular plastics using boron trifluoride complexes. 3,686,103, Cl. 260-2.5ep.

Grace, W. R., & Co.: *See—*
Griesheimer, George T.; and Chance, Joe I., 3,686,373.
Robinson, David W., 3,686,134.

Gracia, Eberto. Arrangement for forming a water shield to extinguish fires in water covered areas. 3,685,584, Cl. 169-2.00r.

Gradov, Oleg Borisovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich, 3,686,522.

Graf, George W.: *See—*
Adams, Albert C.; Crosby, John J.; and Graf, George W., 3,685,759.

Graham, Reginald: *See—*

Powers Patrick; Graham, Reginald; and Bingham, Richard Albert, 3,686,683.
Graig, Dwin R., to Ingenuics, Inc. Large area retro-transmitting light meter. 3,685,912, Cl. 356-157.000.
Granger, Edward H., Jr., to Phillips, F. C., Inc. Golf shoe cleat and support therefor. 3,685,175, Cl. 36-67.00r.
Grante, Ralph; and Andre, Byron, to Dynamic Tools Ltd. Hydraulically operated hand tools. 3,685,151, Cl. 30-134.000.
Grasselli, Robert K.; and Miller, Robert C., to Standard Oil Company, The. Catalytic conversion of saturated hydrocarbons to unsaturated products by oxidation in the presence of a halogen. 3,686,295, Cl. 260-533.00n.
Grasshoff, J. Michael; and Taylor, Lloyd D., to Poloroid Corporation. Novel photographic products and processes. 3,685,991, Cl. 96-26.000.
Greaves, Derek Vincent. Aerated gas burners. 3,685,949, Cl. 431-349.000.
Green, Thomas C.: *See—*
Farman, Charles E.; Green, Thomas C.; Pepper, Hurley D.; and Slone, Samuel, 3,686,115.
Greenbank Engineering Company Limited: *See—*
Loveday, Harry W.; and Whittaker, Jack D., 3,685,167.
Greenberg, Allen A.: *See—*
Meth, Harry; and Greenberg, Allen A., 3,685,936.
Greene, Janice L.; and Clark, Rosalind E., to Standard Oil Company. Conversion of nitriles to amides in the presence of alkaline catalysts. 3,686,307, Cl. 260-561.00n.
Greenwood, Robert; and Shepherd, John Michael, to T.M.M. (Research) Limited. Textile spinning machines. 3,685,272, Cl. 57-58.950.
Greig, William John: *See—*
Banfield, Joseph Henry; Husni, Saleem Ynes; and Greig, William John, 3,686,080.
Gresham, John Thomas, to FMC Corporation. Flourinated thioether-acrylic esters and polymers thereof. 3,686,283, Cl. 260-486.00h.
Griesbalm, Karl: *See—*
Oswald, Alexis; Hall, Daniel N.; and Griesbalm, Karl, 3,686,326.
Griesheimer, George T.; and Chance, Joe I., to Grace, W. R., & Co. Urea-prill anti-caking process. 3,686,373, Cl. 264-14.000.
Grisard, Jean; and Grisard, Marcel A., to Incormac S. A. Plinth and/or framing elements for partitions and partitions applying such elements. 3,685,227, Cl. 52-242.000.
Grisard, Marcel A.: *See—*
Grisard, Jean; and Grisard, Marcel A., 3,685,227.
Groce, Ernest F., to Wayne Manufacturing Company. Controlled stump remover. 3,685,557, Cl. 144-2.00n.
Groen, Siemen H.; and Deumens, Johannes J. M., to Stamicarbon N. V. Preparation of (2-cyanoethyl) ketones. 3,686,262, Cl. 260-465.100.
Groepper, Jurgen; and Sanchez, Jose, to Pennwalt Corporation. Curing and polymerizing processes employing beta-substituted diperoxyketals. 3,686,102, Cl. 260-2.5ha.
Groom, Robert G.: *See—*
Gleim, Ralph A.; and Groom, Robert G., 3,686,650.
Grosshauser, Anton: *See—*
Laosig, Harry; and Grosshauser, Anton, 3,685,233.
Grotewold, William H.: *See—*
Straub, Bruno E.; and Grotewold, William H., 3,685,395.
Grover, George M.; and Coyle, Edward L., to ACF Industries, Incorporated. Heating system for a railway tank car or the like. 3,686,040, Cl. 165-105.000.
Gruber, Clarence R. Particle cleaning. 3,685,651, Cl. 209-133.000.
Gruber, Hermann; and Schmitz-Josten, to Farbenfabriken Bayer Aktiengesellschaft. Polyurethane casting resins containing aryl oxyalkanols. 3,686,140, Cl. 260-47.0cb.
Grunig, James K.; Davis, William B.; and Aitkenhead, William C., to Anaconda Company, The. Extraction of beryllium from ores. 3,685,961, Cl. 23-24.00b.
Guadagnolo, Robert Noel, to RCA Corporation. High voltage pulse generator. 3,686,516, Cl. 307-263.000.
Gualdi, Giorgio; Lugo, Luigi; and Reni, Cesare, to Societa Italiana Resine S.p.A. Process for the preparation of aromatic carboxylic acids. 3,686,293, Cl. 260-524.00r.
Guilhem, Robert Germain; and Fouche, Yvon Pierre Jean, to Compagnie Francaise Thomson-Houston. Pulse compressor system. 3,686,572, Cl. 325-321.000.
Gulf General Atomic Incorporated: *See—*
Bokros, Jack C.; and Ellis, Willard H., 3,685,059.
Gulf Research & Development Company: *See—*
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,285.
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,286.
Bacha, John D.; and Selwitz, Charles M., 3,686,314.
Cupples, Barrett L.; Murphy, Clarence R.; and Walsh, William L., 3,686,076.
Deffner, John F., 3,686,224.
Hay, Russell G.; Mc Nulty, John G.; and Walsh, William L., 3,686,274.
Hay, Russell G.; McNulty, John G.; and Walsh, William L., 3,686,275.
Hedrich, Loren W., 3,685,981.
Gulick, Ronald A.; and McEver, Robert M., Jr., to Research Engineering Company. Unidirectional dampener. 3,685,621, Cl. 192-12.00b.
Gulton Industries, Inc.: *See—*
Leonard, Murray, 3,686,437.
Gunn, Kenneth M.: *See—*
Van Stavern, Merle H.; Moorer, Henry D.; Miller, Gordon H.; and Gunn, Kenneth M., 3,685,653.
Guptill, Frank E., Jr.: *See—*
Hess, Howard V.; and Guptill, Frank E., Jr., 3,685,581.
Gurkov, Konstantin Stepanovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.
Gurtler, Edgar, to Kalle Aktiengesellschaft. Multi-layer wrapping sheet comprising a plastic film, a bitumen layer and a kraft paper layer: the layers being non-coextensive on one edge. 3,686,060, Cl. 161-39.000.
Gurvich, Lev Moiseevich: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.
Haag Streif AG.: *See—*
Papritz, Hans, 3,685,779.
Haberlen, Roland: *See—*
Beuerle, Harbert; and Haberlen, Roland, 3,685,518.
Haberman, Lee, mesne: *See—*
Goodman, Irving, 3,685,186.
Habermeier, Juergen; Batzer Hans; Porret, Daniel; Peter, Heinrich; and Fechtig, Bruno. Certain diglycidyl esters of N-heterocyclic compounds. 3,686,174, Cl. 260-257.000.
Hack, Helmuth: *See—*
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,686,198.
Munz, Ferdinand; Hack, Helmuth; and Eue, Ludwig, 3,686,204.
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Bernhard; and Hausweiler, Arnold, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of cyanopyridines. 3,686,194, Cl. 260-294.900.
Hageman, Howard A., to Uniroyal, Inc. Polyphenolic disulfides and method for producing same. 3,686,325, Cl. 260-608.000.
Hageman, Kenneth C. Educational device. 3,685,172, Cl. 35-48.00r.
Hagenbach, Robert Joseph, to Xerox Corporation. Developer system. 3,685,113, Cl. 29-148.40b.
Hagman, John F., to Du Pont de Nemours, E. I., and Company. Curing dialkyl xanthogen disulfide-modified chloroprene sol polymers with amines. 3,686,156, Cl. 260-92.300.
Hahn, Frederick C.; and Miller, Ronald R., to Esco Corporation. Two piece cutting edge. 3,685,177, Cl. 37-141.00r.
Haley, Mazler, (Manufacturing) Limited: *See—*
Bannister, Brian Charles, 3,685,185.
Hall, Alan Frank, to Imperial Chemical Industries Limited. Method of sealing or jointing. 3,686,375, Cl. 264-32.000.
Hall, Daniel N.: *See—*
Oswald, Alexis; Hall, Daniel N.; and Griesbalm, Karl, 3,686,326.
Hall, George D., to Rockwell Manufacturing Company. Permanent magnet motors. 3,686,524, Cl. 310-154.000.
Hall, Maclin S., to Owens-Illinois, Inc. Visual display and memory system. 3,686,686, Cl. 340-324.00r.
Hall, Robert M. Locking pin coupling. 3,685,864, Cl. 287-100.000.
Hall, Roger D.: *See—*
Clasby, David N.; and Hall, Roger D., 3,686,674.
Hallas, Robert: *See—*
Cole, John Wayne; and Hallas, Robert, 3,686,187.
Hallingters Co., The: *See—*
Niman, George J., 3,686,574.
Halma, Laszlo: *See—*
Erne, Hansjorg; and Halma, Laszlo, 3,685,692.
Hamada, Yoshio; and Yoshino, Motohisa, to Takeda Chemical Industries, Ltd. Nutrient ration for increasing growth of livestock and poultry. 3,686,392, Cl. 424-16.000.
Hamilton, Ferris F. Method and apparatus for airborne seismic exploration. 3,685,608, Cl. 181-.5vm.
Hammarplast AB: *See—*
Holm, Karl Arne, 3,685,830.
Hammond Machinery Builders, Inc.: *See—*
Bell, Ramsay M., 3,685,393.
Hamrick, Joseph T. Antipersonnel mine distruct system. 3,685,453, Cl. 102-90.000.
Handschuch, Karl: *See—*
Landwehrkamp, Hans; Schreyer, Frinz; and Handschuch, Karl, 3,685,267.
Hankosky, Andrew: *See—*
Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, 3,685,536.
Hannahan, William F.: *See—*
Craven, Harry J.; Hannahan, William F.; and Viscusi, James J., 3,685,931.
Hanschke, Ernst: *See—*
Fester, Walter; Hanschke, Ernst; and Jakob, Franz, 3,686,148.
Hansen, James H.; Leedy, Nelson J.; and Slonaker, Robert O., to Owens-Corning Fiberglas Corporation. Laminar refractory structures for forming glass fibers. 3,685,978, Cl. 65-1.000.
Hansen, Wallace A., to Essex International Inc. Ground terminal. 3,686,609, Cl. 339-14.00r.

Harada, Kenichi, to Olympus Optical Co., Ltd. 1X objective for projection printing. 3,685,884, Cl. 350-214.000.

Harben, Grover S., Jr., to Gainesville Machine Company, Inc. Apparatus for eviscerating chickens or other fowl. 3,685,096, Cl. 17-11.000.

Harley, Wayne E.; and Coughlin, Ronald D. Roller-band devices. 3,686,597, Cl. 335-230.000.

Harper, Chester H.: *See—*
Allen, Kenneth M.; and Harper, Chester H., 3,685,703.

Harper, John: *See—*
Gapp, Roland Howard; Alazraki, Marcos; and Harper, John, 3,685,391.

Harrington, Joseph Kenneth: *See—*
Moore, George G. I.; Harrington, Joseph Kenneth; and Gerster, John F., 3,686,192.

Harris, Barbara Joan: *See—*
Harris, Kenneth John, 3,686,472.

Harris, Kenneth John, to Harris, Barbara Joan. Space heating apparatus. 3,686,472, Cl. 219-213.000.

Harris, Richard William, to Molins Machine Company, Limited. Packing or wrapping machines of the mould wheel type. 3,685,631, Cl. 198-31.0aa.

Harrison, Hugh T.; and Goodwin, Korwin J., to Dow Chemical Company, The. Aqueous hydraulic cement slurry. 3,686,008, Cl. 106-92.000.

Harrison, John William, to Westinghouse Electric Corporation. Bacon cooker. 3,685,434, Cl. 99-425.000.

Harter, Bernard Gerald: *See—*
Erwin, Ronald L., 3,685,702.

Hartmann, Clinton S.; and Jones, William S. Unidirectional surface wave transducers. 3,686,518, Cl. 310-9.800.

Hartmann, Ludwig A., to Atlas Chemical Industries, Inc. Method of preparing aluminum complexes of polyhydroxy compounds. 3,686,249, Cl. 260-448.0ad.

Harwell, Roy M., Jr. Rotary offset silk screening apparatus with squeegee adjustments. 3,685,442, Cl. 101-119.000.

Harza, Richard D. Method for garbage disposal. 3,685,309, Cl. 65-62.000.

Haschke, Heinz; and Bader, Erich, to Deutsche Gold- und Silber-Scheideanstalt vormal Roessler. Hydroxycarboxylic acid polymers from polyacroleins. 3,686,145, Cl. 260-670.000.

Hasegawa, Tadashi. Method for producing copolymerizable compound containing functional group of phosphoric acid. 3,686,371, Cl. 260-980.000.

Haskins, Lauren D.; and Kelly, Samuel T., to Robertshaw Controls Company. Thermostatic control device with heat motor operated step open diaphragm valve. 3,685,732, Cl. 236-68.00r.

Hatch, Melvin J.: *See—*
Jones, Giffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,686,279.

Hattori, Kenichi; Yamakawa, Tyoji; and Tuji, Akitoshi, to Kao Soap Co., Ltd. Dispersing composition. 3,686,133, Cl. 252-354.000.

Haumer, Carlo. Structure for the assembling of modular furniture structure. 3,685,465, Cl. 108-111.000.

Haun, Horace H. Surveyor sight. 3,685,162, Cl. 33-74.000.

Hauni-Werke Korber & Co., KG: *See—*
Rudszinat, Willy; and David, Harry, 3,685,633.

Hauptmann, Gerhard; and Weber, Erhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Distillative purification of acetone in four stages. 3,686,078, Cl. 203-75.000.

Hausweiler, Arnold: *See—*
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Bernhard; and Hausweiler, Arnold, 3,686,194.

Havas, George; and Dewan, Shashi Bhushan, to Ajax Magnethermic Corporation. Control for frequency converters. 3,686,558, Cl. 321-7.000.

Hawkins, William E., to Du Pont de Nemours, E. I., and Company. Gas assisted electrostatic pinning. 3,686,374, Cl. 264-22.000.

Hay, Russell G.; Mc Nulty, John G.; and Walsh, William L., to Gulf Research & Development Company. Process for preparing esters. 3,686,274, Cl. 260-475.00r.

Hay, Russell G.; McNulty, John G.; and Walsh, William L., to Gulf Research & Development Company. Process for preparing esters. 3,686,275, Cl. 260-475.00r.

Hayashi, Koichiro: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Hayashi, Tadao: *See—*
Kita, Yasuo; and Hayashi, Tadao, 3,685,537.

Hayashi, Tatsuo: *See—*
Inada, Masmi; and Hayashi, Tatsuo, 3,685,867.

Haydon, Arthur W., to Tri-Tech, Inc. Clock system. 3,685,278, Cl. 58-24.000.

Haynes, James N., to Hercules Incorporated. Azidoformates and their use. 3,686,231, Cl. 260-349.000.

Hays, Richard Young, to Du Pont de Nemours, E. I., and Company. Method and apparatus for melt-spinnng hollow fibers. 3,686,377, Cl. 264-40.000.

Heacox, Russel L., to P & Z Company, Inc. Process and apparatus for the installation of jack piles. 3,685,301, Cl. 61-51.000.

Heathcote, Bernard Vincent: *See—*
Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,686,218.

Heavner, William D., Jr.: *See—*
Zaremski, Donald R.; Beigay, Jack M.; and Heavner, William D., Jr., 3,685,136.

Heberlein & Co., AG: *See—*
Vorderbruegge, Hermann; and Mehrmann, Ludwig, 3,685,324.

Heckmann, Carl-Justus; and Heckmann, Michael, to Heckmannwerk KG. Gas-dispersing means for plate columns. 3,685,811, Cl. 261-114.00r.

Heckmann, Michael: *See—*
Heckmann, Carl-Justus; and Heckmann, Michael, 3,685,811.

Heckmannwerk KG: *See—*
Heckmann, Carl-Justus; and Heckmann, Michael, 3,685,811.

Hed, Aharon Zeev; and Freud, Paul J., to Battelle Memorial Institute. Polaronic semicond. ctor devices. 3,686,096, Cl. 252-519.000.

Hedrich, Loren W., to Gulf Research & Development Company. Combating unwanted vegetation with N-dimethyloxazolyl sulfanilamides. 3,685,981, Cl. 71-88.000.

Hedrick, Robert K.: *See—*
Marshall, Robert G.; and Hedrick, Robert K., 3,685,074.

Heffran, Vernon C., to Owens-Illinois, Inc. Vented closure. 3,685,679, Cl. 215-56.000.

Heilmann, Le Roy W., to Nooter Corporation. Tank construction. 3,685,508, Cl. 126-378.000.

Hein, Richard W.; and Bruson, Herman A., to Eschemco Corporation, mesne. B,B,B'-trichloro-α-hydroxy-iso-butyric acid. 3,686,297, Cl. 260-535.00h.

Heine, Hans-Georg: *See—*
Rosenkranz, Hans-Jurgen; Rudolph, Hans; and Heine, Hans-Georg, 3,686,084.

Heinz, Walter E.; and McAndrew, Francis B. Copolymers of trioxane with any one of vinyl cyclohexene dioxide, resorcinol diglycidyl ether, a diglycidyl ether of 2,2'-bis(4-hydroxy phenyl) propane and the triglycidyl ether of trimethylolpropane. 3,686,142, l. 260-47.0fp.

Heinze, Gerhard: *See—*
Schwochow, Friedrich; Heinze, Gerhard; and Weber, Horst, 3,685,963.

Held, Manfred, to Messerschmitt-Bolkow-Blohm GmbH. Electrical switch acting with the force of inertia. 3,685,452, Cl. 102-70.20r.

Heller, Harold M., to Dennison Manufacturing Company. Dispensing package with article-retaining tear strip. 3,685,648, Cl. 206-78.00b.

Hendricks, Udo: *See—*
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,685,951.

Henige, Gerald L.: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.

Henkel & Cie GmbH: *See—*
Werdehausen, Achim; and Krings, Peter, 3,686,128.

Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, to Fujitsu Limited. Semihard magnetic material. 3,686,042, Cl. 148-31.550.

Henning, Donald S., to Autotrol Corporation. Snap action valve actuator. 3,685,792, Cl. 251-75.000.

Henning, Donald S., to Autotrol Corporation. Flapper valve assembly. 3,685,794, Cl. 521-303.000.

Henrick, Clive A.; Edwards, John A.; and Fried, John H., to Syntex Corporation. Production of 5,6,7,7a-tetrahydroindan-5-ones. 3,686,215, Cl. 260-327.00m.

Henriot, Maurice. Prefabricated heating, ventilating and air conditioning unit. 3,685,575, Cl. 165-48.000.

Henry, Colin Alexander: *See—*
Cothran, Samuel Bynum; and Henry, Colin Alexander, 3,685,644.

Henry, Nelson R.; and Middour, Donald R., to Woodman Company, Inc., The. Cam interrupted sealing jaws for product stripping. 3,685,250, Cl. 53-100.000.

Henry, Ralph E., to Dresser Industries, Inc. Packing for compressors, pumps or the like. 3,685,840, Cl. 277-28.000.

Henry-Baudot, Jacques, to Kollmorgen Corporation. Magnetic motors. 3,686,521, Cl. 310-96.000.

Henschel-Steinau Company: *See—*
Fortunato, Vincent, 3,685,775.

Herbert, Denis; and Wade, Henry E. L-asparaginase from Erwinia. 3,686,072, Cl. 195-62.000.

Hercules Incorporated: *See—*
Aldrich, Paul H.; Bartell, Don G.; and Espy, Herbert H., 3,686,109.
Haynes, James N., 3,686,231.
Keim, Gerald, 3,686,151.
Olt, Robert L., 3,685,163.
Rave, Terence W., 3,686,280.

Hermann, Gunther: *See—*
Dickore, Karlfried; Wegler, Richard; and Hermann, Gunther, 3,686,201.
Schrader, Gerhard; and Hermann, Gunther, 3,686,257.

Hermann, Klaus Dieter. Hand held labelling apparatus. 3,686,055, Cl. 156-384.000.

Herrell, Robert E; and Moore, Stephen G., to Celotex Corporation, The. Wrapping apparatus. 3,685,253, Cl. 53-228.000.

Herrington, Franklin L. Mounting rack. 3,685,708, Cl. 224-42.42r.

Hersey Products, Inc.: *See—*
Foster, Harry C., 3,685,735.

Hervert, George L., to Universal Oil Products Company. High octane paraffinic motor fuel production. 3,686,354, Cl. 260-683.430.

Herz, Robert: *See—*

Borner, Helmut; and Herz, Robert, 3,685,689.
Heskfft, Don Edward; Hoover, Frank Kryder; Burkhalter, Robert, Jr.; and Anderson, Douglas West, to Morton International, Inc. Filter assembly having removable filter element. 3,685,659, Cl. 210-444.000.
Heslinga, Lammert: *See—*
Boldingh, Jan; Heslinga, Lammert; Schmidl, Ernst; and Syrovataka, Rudolf, 3,686,127.
Hess, Howard V.; and Guptill, Frank E., Jr., to Texaco Inc. Secondary recovery of oil. 3,685,581, Cl. 166-272.000.
Hiatt, John C.; and Luker, John P., to General Portland Cement Co. Method for making cement. 3,686,372, Cl. 263-53.00r.
Hicks, W Glen: *See—*
Wendorf, Clarence F.; and Hicks, W Glen, 3,685,852.
Higa, James Z. Tool for making flexible crimped tubes from pliable sheet material. 3,685,400, Cl. 93-1.500.
Hilbig, Hartmut. Roll cake machine. 3,685,459, Cl. 107-59.000.
Hildebrant, Floyd J.; and Chovanec, John J., to United States of America, Army. Squib switch simulator. 3,685,347, Cl. 73-35.000.
Hill, Donald E.: *See—*
Payne, Stanley D.; Hill, Donald E.; and Walker, Robert G., 3,685,118.
Hill, Roger Gettys; and Hoffman, George A. Apparatus for controlling machine tools. 3,685,375, Cl. 82-11.000.
Hill, William M.: *See—*
Dicks, Peter D. J.; and Hill, William M., 3,685,071.
Hillmer, Duane,. Stamp album. 3,685,187, Cl. 40-159.000.
Hilson, Eugene R., to Maule Industries, Inc. Insert for embedded fittings. 3,685,783, Cl. 249-94.000.
Hiltmann, Rudolf: *See—*
Wollweber, Hartmund; Hiltmann, Rudolf; and Stendel, Wilhelm, 3,686,199.
Hinckley, Paul D.; Klender, Gerald J.; and Lambiott, Jerry F., to Uniroyal, Inc. Flame resistant composition of ABS, polyarylene polysulfone and bromo-aryl compound. 3,686,362, Cl. 260-876.00r.
Hirai, Akiyoshi: *See—*
Kobashi, Uichiro; Aiki, Shigeo; and Hirai, Akiyoshi, 3,685,289.
Hire, Charles John, to Fasco Industries, Inc. Thermostatic switch for fire alarm system. 3,686,605, Cl. 337-334.000.
Hiroshi, Ueki, to Kurita Industrial Co., Ltd. Cleaning composition. 3,686,123, Cl. 252-87.000.
Hirsch, Allen F., to Ortho Pharmaceutical Corporation. 0-(Nitroaryl)oximes of 3-keto steroids. 3,686,237, Cl. 260-397.300.
Hirschman, Paul S.: *See—*
Day, John J.; and Hirschman, Paul S., 3,685,489.
Hirschy, Harlan W.: *See—*
Hubin, Anthony S.; and Hirschy, Harlan W., 3,686,050.
Hirst, Sidney. Transformer with variable secondary reactance. 3,686,464, Cl. 219-131.000.
Hitachi, Ltd.: *See—*
Kadono, Shinji, 3,686,515.
Nakajima, Toshihiko; and Yumde, Yasufumi, 3,685,886.
Omura, Itiro; Kondo, Toshio; and Tamura, Hifumi, 3,686,499.
Cnoda, Yoshimitsu; and Tsuboi, Takashi, 3,686,548.
Ozawa, Minoru; Morito, Tadashi; and Ishigami, Masahiro, 3,686,598.
Takashashi, Yoshinori; Sasaki, Rokuro; Watanabe, Kikuo; and Takizawa, Masau, 3,685,618.
Hobo, Nobuhito; Natsume, Yoshimi; and Kaga, Sumihiro, to Nippondenso Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel control system for internal combustion engines. 3,685,526, Cl. 123-32.0ea.
Hobrough, Gilbert L., to Hobrough Limited. Digital slope limiter. 3,686,489, Cl. 235-152.000.
Hobrough Limited: *See—*
Hobrough, Gilbert L., 3,686,489.
Hoch, Manfred, to Daimler Benz Aktiengesellschaft. Piston internal combustion engine with cylinder liner secured directly at the cylinder head. 3,685,399, Cl. 92-171.000.
Hock, Karl Ludwig; and Pommer, Ernst-Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Substituted 2-halo-3-thiocyanatoacrylates. 3,686,256, Cl. 260-454.000.
Hodge, James G. Method and apparatus for removing cylinder liners of automotive vehicle diesel engines. 3,685,132, Cl. 29-427.000.
Hoeberigs, Jean Marie Mathieu. Automatic vending machine for cooked or fried food product particularly for french-fried potatoes. 3,685,432, Cl. 99-357.000.
Hoeffieur, Albert. Clamp. 3,685,663, Cl. 211-106.000.
Hoerner Waldorf Corporation: *See—*
Tolaas, William M., 3,685,640.
Hoesch Aktiengesellschaft: *See—*
Bottcher, Wolfgang; Kopineck, Hermann-Josef; Schlusnus, Karl-Heinz; and Sommerkorn, Gernot, 3,685,348.
Hofer, Kurt: *See—*
Burdet, Evelyne; and Hofer, Kurt, 3,686,246.
Hoff, Dale R.: *See—*
Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., 3,686,110.
Hoffman, Bernard L., to Krause, Frederick A., Associates, Inc. Hem formation. 3,685,338, Cl. 72-348.000.
Hoffman, George A.: *See—*
Hill, Roger Gettys; and Hoffman, George A., 3,685,375.
Hoffman, Helen B.: *See—*
Stehlin, Theodore A., 3,686,092.
Hoffmann, Hellmut; Scheinpflug, Hans; Kume, Toyohiko; and Yasui, Kazuomi, to Farbenfabriken Bayer Aktiengesellschaft. O-alkyl-S-alkyl-S-phenyl-phosphorodithiolates. 3,686,369, Cl. 260-964.000.
Hoffmann-La Roche, Inc.: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,686,222.
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,686,308.
O'Brien, Jay Philip; and Rachlin, Albert Israel, 3,686,331.
Hofmann, Eberhard; and Holtschmidt, Ulrich. Biocidal preparation. 3,686,405, Cl. 424-263.000.
Hogg, Walter R.: *See—*
Coulter, Wallace H.; and Hogg, Walter R., 3,686,486.
Hohlwegler, Heinz: *See—*
Bruer, Dirk; Schaible, Siegried; Wagenblast, Ernst; and Hohlwegler, Heinz, 3,685,674.
Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, to Farbenfabriken Bayer Aktiengesellschaft. Anthraquinones. 3,686,232, Cl. 260-379.000.
Hoke, Donald Irvin, to Lubrizol Corporation, The. Halogen-substituted derivatives of N-3-oxohydrocarbonsubstituted acrylamides. 3,686,306, Cl. 260-561.00n.
Holland, Dewey G.; and Polevy, John H., to Air Products and Chemicals, Inc. Perfluorocyclohexane carboxamides. 3,686,288, Cl. 260-501.150.
Holland, Joseph L., to General Motors Corporation. Tank vent. 3,685,528, Cl. 137-43.000.
Holley Carburetor Company: *See—*
Ciemochowski, Michael F., 3,686,484.
Manning, William O., 3,685,809.
Holley, George M., Jr. Radio directional control system. 3,686,671, Cl. 343-117.000.
Hollingshead, Frank A., to Murphy, G. W., Industries, Inc. Drill bit. 3,685,601, Cl. 175-318.000.
Hollrah, Glennon H., to Monsanto Company. Anthelmintic method employing certain dithiocarbanilates. 3,686,413, Cl. 424-300.000.
Holm, Karl Arne, to Hammarplast AB. Target-shooting dummy. 3,685,830, Cl. 273-102.00r.
Holman, Rober S.: *See—*
Sullivan, Charles E., 3,685,538.
Holmes, Richard M.: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.
Holtschmidt, Ulrich: *See—*
Hofmann, Eberhard; and Holtschmidt, Ulrich, 3,686,405.
Homma, Ko: *See—*
Sato, Fujio; and Homma, Ko, 3,686,466.
Honda, Thomas Shaw, to General Electric Company. Hydromechanical lead-lag control device. 3,685,501, Cl. 123-108.000.
Honeywell, Inc.: *See—*
Frey, Karl A.; and Schliffke, Warner F., 3,685,216.
Miller, Robert L., 3,686,513.
Yu, Frank K., 3,686,629.
Honjo, Satoru: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Hooker Chemical Corporation: *See—*
Tideswell, Richard B.; and Stone, Jonathan A., 3,686,106.
Hoover, Frank Kryder: *See—*
Heskfft, Don Edward; Hoover, Frank Kryder; Burkhalter, Robert, Jr.; and Anderson, Douglas West, 3,685,659.
Hopkins, Richard H.: *See—*
Roland, George W.; Hopkins, Richard H.; and Melamed, Nathan T., 3,686,586.
Hopper, Inc.: *See—*
Suverkrop, Don, 3,685,668.
Hoppis, Larry; and Willett, Richard L., to Bunker-Ramo Corporation, The. Low impedance wideband strip transmission line transformer. 3,686,594, Cl. 333-84.00m.
Hori, Mikio: *See—*
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, 3,686,167.
Horiuchi, Michio: *See—*
Matsumaga, Kenji; Horiuchi, Michio; and Suzuki, Takao, 3,685,413.
Hornig, Heinz: *See—*
Keberle, Wolfgang; Hornig, Heinz; and Sinn, Gustav, 3,686,387.
Horowitz, Alexandre; and Beusink, Bernard Joseph, to U.S. Philips Corporation. Cutter cylinder lawn mower in which the cutter cylinder is arranged so as to be self-energizing. 3,685,265, Cl. 56-249.000.
Horstman, Anton J., to Bauer Bros, Co., The. Double revolving disc refiners and methods of their use. 3,685,747, Cl. 241-15.000.
Horstmann Gear Company Limited, The: *See—*
Dee, Colin William, 3,685,875.
Horton, Robert A., to Precision Metalsmiths, Inc. Refractory cores and methods of making the same. 3,686,006, Cl. 106-38.300.
Hotchkiss, Stuart E.: *See—*
Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., 3,686,678.
Houlihan, William J.: *See—*
Cooke, George A.; and Houlihan, William J., 3,686,178.

Houlihan, William J.; and Manning, Robert E. Substituted thiazolo[3,2-a] pyrimidines. 3,686,173, Cl. 260-251.00a.
Houlihan, William J.; and Nadelson, Jeffrey. Substituted isochroman or phthalan piperidenes. 3,686,186, Cl. 260-293.580.
Houlihan, William J.; and Manning, Robert E., to Sandoz-Wander, Inc. 1-Hydroxy-isoindol-3-ones. 3,686,207, Cl. 260-325.000.
Howard Displays, Inc.: *See—*
Kramer, Jerome D., 3,685,664.
Howarth, Graham Arton; and Hoyle, William, to Ciba Geigy Corporation. Compositions with 5-nitro-2-furyl-isoxazoles and their use as antibacterial and antifungal agents. 3,686,408, Cl. 424-272.000.
Howell, Richard S.; and Brunner, Robert V., to Xerox Corporation. Dual mode electrographic recorder. 3,686,676, Cl. 346-74.0es.
Hoyle, William: *See—*
Howarth, Graham Arton; and Hoyle, William, 3,686,408.
Hoyle, William; and Savage, Michael Philip, to Ciba-Geigy Corporation. Novel substituted 5-nitrofurfurylideneamino-oxazolidinones. 3,686,170, Cl. 260-240.00a.
Huber, Hugh Dana; and Edgren, Jack C., to Conenco International Limited, mesne. Anchorage system for stressing concrete. 3,685,934, Cl. 425-111.000.
Huber, Melvin F.: *See—*
Caslow, Joseph H.; Huber, Melvin F.; and Wootten, John A., 3,685,697.
Hubin, Anthony S.; and Hirschy, Harlan W., to Kimberly-Clark Corporation. Method and apparatus for making seamless cross-bias reinforced tissue-fiber laminates. 3,686,050, Cl. 156-174.000.
Hubner, Franz; and Jilek, Walter, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Apparatus for indicating the rise of liquid in a mold. 3,685,358, Cl. 73-321.000.
Hubner, Otto. Mechanically powered toothbrush. 3,685,080, Cl. 15-22.00r.
Hudson Products Corporation, mesne: *See—*
Davidson, Eugene M., 3,685,332.
Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. N-benzofurylmethyl-arylalkylene imines. 3,686,188, Cl. 260-294.80c.
Hughes, John Joseph: *See—*
Napoli, Louis Sebastian; and Hughes, John Joseph, 3,686,624.
Hughes, Thomas H., to PPG Industries, Inc. Framing machine and method. 3,685,122, Cl. 29-235.000.
Hull, Richard A.: *See—*
Sharp, Allen B.; and Hull, Richard A., 3,685,128.
Huller Rottenburg Gesellschaft mit beschrankter Haftung: *See—*
Fischer, David; Kohler, Rudolf; Roos, Hugo; and Merker, Joachim, 3,685,845.
Huml, James O.: *See—*
Layne, Gilbert S.; and Huml, James O., 3,685,984.
Hunter, Bruce H.; and Reiner, Norbert L., to Coleco Industries, Inc. Filter underdrain assembly and method of producing same. 3,685,657, Cl. 210-289.000.
Hurth Carl Maschinen-und Zahnsadfabrik: *See—*
Lohrer, Josef, 3,685,112.
Hurwitz, Marvin Joseph: *See—*
De Witt, Walter Groesbeck, III; and Hurwitz, Marvin Joseph, 3,686,361.
Husni, Saleem Ynes: *See—*
Banfield, Joseph Henry; Husni, Saleem Ynes; and Greig, William John, 3,686,080.
Hutchins, Everett C.; Spencer, Gary E.; and Tucker, Marion K., to General Motors Corporation. Automotive air conditioning compressor. 3,685,923, Cl. 417-273.000.
Huygelen, Constant; and Peetermans, Julien, to Recherche et Industrie Therapeutiques R.I.T. Attenuated live rubella virus vaccine and method of production. 3,686,394, Cl. 424-89.000.
Hydro-Test, Inc.: *See—*
Ball, Frank C.; and Knapp, Willard E., 3,685,544.
Hyrylainen, Kauko Kalervo, to Oy Nokia AB. Connecting plug for a current supply rail. 3,686,614, Cl. 339-21.00r.
Iannelli, Frank M., to Yan-Nell Corporation. Liquid dispenser plastic bottle and receptacle with piercing units. 3,685,694, Cl. 222-82.000.
Iannini, Americo: *See—*
Rindner, Wilhelm; Iannini, Americo; and Garfein, Andre, 3,686,542.
Ichihara, Taku: *See—*
Kitaoka, Kouichi; and Ichihara, Taku, 3,686,431.
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, to Tokyo Shibaura Electric Co., Ltd. Piezolectric materials. 3,686,122, Cl. 252-62.900.
IIT Research Institute: *See—*
Camras, Marvin, 3,686,433.
Camras, Marvin, 3,686,436.
Camras, Marvin, 3,686,467.
Iketani, Taisho. Device for automatically or manually spraying a pressurized fluid. 3,685,693, Cl. 222-54.000.
Imai, Tadayuki, to Kabushiki Kaisha Ricoh. Mechanism for coupling the exposure meter to the aperture diaphragm control means in an interchangeable lens of a single-lens reflex camera. 3,685,419, Cl. 95-64.00r.
Imperial Chemical Industries Limited: *See—*
Hall, Alan Frank, 3,686,375.
Thompson, Morice William; and Walbridge, Derek John, 3,686,114.
Imperial Manufacturing and Engineering Company, The: *See—*
Fink, Frank J., 3,685,131.
Imperial-Eastman Corporation: *See—*
Kowal, Leonard J., 3,685,335.
Inada, Masmi; and Hayashi, Tatsuo, to Aisin Seiki Company Limited. Automotive wheel anti-skid mechanism. 3,685,867, Cl. 303-21.00f.
Incormac S. A.: *See—*
Grisard, Jean; and Grisard, Marcel A., 3,685,227.
Indak Manufacturing Corporation: *See—*
Black, Charles E., III; and Schaad, William J., 3,686,449.
Inductosyn Corporation: *See—*
Tripp, Robert W., 3,686,487.
Industra Products, Inc.: *See—*
Geber, Eugene E., 3,685,119.
Payne, Stanley D.; Hill, Donald E.; and Walker, Robert G., 3,685,118.
Industrial de Cascarillas-Ciscann S.A.: *See—*
Runton, Leslie A., 3,686,384.
Industrie Phirelli Societa per Azioni: *See—*
Lombardi, Aurelio; Anelli, Pietro; and Bianchi, Gianfranco, 3,686,428.
Industriele Onderneming Waving N.V.: *See—*
Sigmund, Franck, 3,685,546.
Ingenjorsfirma Hebe AB: *See—*
Bergling, Charles; and Birger, Gunnar, 3,685,634.
Ingenuics, Inc.: *See—*
Graig, Dwin R., 3,685,912.
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Inoue, Kiyosh. Servosystem for gap electrical machining processes (especially electroerosion). 3,686,461, Cl. 219-69.00g.
Inoue, Masatoshi: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, 3,686,132.
Inoue, Shigeru: *See—*
Otsuka, Eiji; Kanai, Kazumichi; and Inoue, Shigeru, 3,686,305.
Insect-I-Var Corporation: *See—*
Smith, Charles N., 3,685,198.
Insinooritoimisto Alpo Makinen & Co.: *See—*
Makinen, Alpo Eino, 3,686,383.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Laleuf, Rene; and Nechtschein, Jacqueline, 3,686,094.
Magneville, Pierre, 3,685,448.
Institut Gornogo Dela Sibirskogo Otdelenia AN: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.
Institut Textile de France: *See—*
Cuvelier, Georges; and Wattiez, Daniel, 3,685,953.
Instituto de Angeli S.p.A.: *See—*
Pala, Gianfranco, 3,686,189.
Institutul Pentru Creatie Stiintifica si Tehnica: *See—*
Coanda, Henri; and Teodorescu, Constantin, 3,685,614.
International Business Machines Corporation: *See—*
Abramson, Paul; and Goertzel, Gerald, 3,686,576.
Elliott, Joseph E.; and International Business Machines Corporation, 3,686,631.
Stahlberg, Eugene G.; Tagawa, James M.; and Tiao, Hui-Li, 3,686,470.
Uberbacher, Edward C., 3,686,617.
International Computers Limited: *See—*
Lutterkort, Hans Heinz, 3,686,560.
International Flavors & Fragrances, Inc.: *See—*
Brodnitz, Michael H.; Pascale, John V.; and Vock, Manfred H., 3,686,323.
Brodnitz, Michael H.; and Pascale, John V., 3,686,324.
Kratz, Philip De C.; and Bondarovich, Henry A., 3,686,004.
Pittet, Alan O.; Mason, Michael E.; Theimer, Ernst T.; and Tibbetts, Merrick S., 3,686,177.
International Nickel Company, Inc., The: *See—*
Petersen, Walter A., 3,686,027.
International Nickel Company, The: *See—*
Brookes, Kenneth Joseph Alban, 3,685,727.
International Standard Electric Corporation: *See—*
Blixt, S. Stefan; and Andersson, Dag Martin, 3,686,662.
Thomas, David M., 3,686,441.
Zakaria, Hisham Mohamed Saadellah, 3,686,593.
International Telephone and Telegraph Corporation: *See—*
Wouda, Sally A., 3,685,252.
International Video Corporation: *See—*
Dann, Bert H., 3,686,587.
Irvine, Robert Leard. Hydrocracking arrangement. 3,686,093, Cl. 208-57.000.
Irwin, Thomas J.: *See—*
Krutz, Ronald L.; and Irwin, Thomas J., 3,686,507.
Ishida, Akira, Kyoto: *See—*
Wada, Koji; and Ishida, Akira, Kyoto, 3,685,726.
Ishigami, Masahiro: *See—*
Ozawa, Minoru; Morito, Tadashi; and Ishigami, Masahiro, 3,686,598.
Ishizuka, Shigeru, to Yokosho Company Ltd. Radio control system for camera. 3,686,672, Cl. 343-225.000.
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and

Okamura, Seizo, to Japan Atomic Energy Research Institute. Polymerization of tetraoxane in the presence of an iodine or bromine initiatr. 3,686,085, Cl. 204-159.210.

Ito, Toshio: *See—*
Nomaguchi, Tamotsu; Tabata, Norikazu; and Ito, Toshio, 3,685,950.

Ito, Yoshio; Smiyama, Shinichi; Toyoda, Akinobu; and Minami, Shoichitro, to Japanese Geon Company, Ltd., The. Process for the production of methacrylic acid. 3,686,294, Cl. 260-530.00n.

Iwai, Tadashi: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Iwama, Atsuaki: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Odaka, Takashi; and Suda, Tetuo, 3,685,929.

Jack, William, Jr. Golf putting practice device. 3,685,833, Cl. 273-176.0fa.

Jackson, Brian; and Barrett, John Eric, to EMI Limited. Improvements relating to the output power derived from phase modulating. 3,686,588, Cl. 332-9.00r.

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Jackson, Harold Ernest, to Petrol Injection Limited. Fuel injection nozzles. 3,685,742, Cl. 239-407.000.

Jacobsen Manufacturing Company: *See—*
Rogers, Chester D., 3,685,469.

Jacoby, John M.: *See—*
Walbeck, Calvin; Jacoby, John M.; Gepp, Carl E.; and Robertson, Louis A., 3,685,450.

Jacyno, Anthony, to Murphy, G. W., Industries, Inc. Insulated chuck. 3,685,843, Cl. 279-1.00r.

Jade Corporation: *See—*
Wing, Henry; and Cooper, Ray, 3,685,117.

Jaffa, David, to Precision Screen Machines, Inc. Squeegee assembly for use in screen printing machines. 3,685,085, Cl. 15-245.000.

Jahr, Odd: *See—*
Ahlgren, Nils Harald; and Jahr, Odd, 3,685,801.

Jakob, Franz: *See—*
Fester, Walter; Hanschke, Ernst; and Jakob, Franz, 3,686,148.

Jantzen, Leif, to Trask, Arthur C., & Sons. Method of separating lignosulfonic acids. 3,686,161, Cl. 260-124.00r.

Japan Atomic Energy Research Institute: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Japanese Geon Company, Ltd., The: *See—*
Ito, Yoshio; Smiyama, Shinichi; Toyoda, Akinobu; and Minami, Shoichitro, 3,686,294.

Javan, Ali; and Freed, Charles. Method of stabilizing a gas laser. 3,686,585, Cl. 331-94.500.

Javellaud, Jean: *See—*
Blattmann, Henri; Javellaud, Jean; and Yerouchalmi, David, 3,686,519.

Jenkins Metal Shops, Inc.: *See—*
Jenkins, Robert Bain, Jr., 3,685,099.

Jenkins, Robert, & Company Limited: *See—*
Charlesworth, Eric, 3,686,463.

Jenkins, Robert Bain, Jr., to Jenkins Metal Shops, Inc. Spark preventing card screen. 3,685,099, Cl. 19-95.000.

Jensen, James R., to Pacific Car and Foundry Company. Spring brake control valve. 3,685,870, Cl. 303-71.000.

Jet-X Corporation: *See—*
Proctor, Rudy R.; and Proctor, Denver L., 3,685,803.

Jilek, Walter: *See—*
Hubner, Franz; and Jilek, Walter, 3,685,358.

Jinsenji, Sei: *See—*
Kakiuchi, Tokusaburo; Ando, Akira; Akiyama, Hideaki; and Jinsenji, Sei, 3,685,767.

Jobert, Raymond; and Vuchner, Bernard, to Ugine Kuhlmann. Process of manufacture of acrylic and methacrylic higher esters. 3,686,268, Cl. 260-465.400.

Joh. Vaillant KG: *See—*
Frithjof, Carouge, 3,685,733.

Johns, Herman S., to Wellman Industries, Inc. Method for processing sliver. 3,685,102, Cl. 19-150.000.

Johnson, Ernest D., to Goodyear Tire and Rubber Company, Inc. Passenger conveyor warning apparatus. 3,685,635, Cl. 198-16.000.

Johnson, Franklin W.: *See—*
Wiley, William H.; and Johnson, Franklin W., 3,686,485.

Johnson, John David. Property boundary marker. 3,685,237, Cl. 52-98.000.

Johnson, Maynard Dale: *See—*
Amos, Charles William; Johnson, Maynard Dale; and Dieckmann, John Jacob, 3,685,329.

Johnson Service Company: *See—*
Thoma, Paul E., 3,686,606.

Johnson, Theodore B. Method of playing a golf game. 3,685,832, Cl. 273-176.00a.

Johnston, Howard; and Ruetman, Sven H. Perchlorinated vinylcyanopyridines. 3,686,193, Cl. 260-294.900.

Jones, Elvis E.: *See—*
Davis, Billy D.; and Jones, Elvis E., 3,686,101.

Jones, Giffin D.; Geyer, Gerald R.; and Hatch, Melvin J., to Dow Chemical Company, The. 2-Methylene-3-butenyl sulfonium salts useful as monomers. 3,686,279, Cl. 260-481.00r.

Jones, James L.: *See—*
Dahlquist, Ralph L.; and Jones, James L., 3,685,911.

Jones, John Walter, to General Descaling Company, Limited. Bidirectional pipeline pig. 3,685,083, Cl. 15-104.06r.

Jones, William S.: *See—*
Hartmann, Clinton S.; and Jones, William S., 3,686,518.

Jorgensen, Kirsten Borre: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.

Judd, Sebastian F.: *See—*
Amtsberg, Lester A.; Bilodeau, Paul J.; and Judd, Sebastian F., 3,685,593.

Judlowe, Stephen B. Alarm system employing plural modules accommodating binary and analog transducers. 3,686,654, Cl. 340-213.100.

Jullien-Davin, Jean, to Crouzet. Miniaturized circuit-breaker switch. 3,686,602, Cl. 337-66.000.

Jungkind, Roland: *See—*
Marker, Hannes; and Jungkind, Roland, 3,685,849.

Juodis, Alter; and Gauch, George J., to Uniroyal, Inc. Apparatus for confining floating materials. 3,685,297, Cl. 61-1.00f.

Jureit, John Calvin; Csakvary, Oscar; and Castillo, Adolfo, to Automated Building Components, Inc. Method of fabricating wooden building wall frames. 3,685,129, Cl. 29-407.000.

Kabushiki Kaisha Haltori Tokeiten: *See—*
Kawamura, Toshiki; Ohneda, Tohru; Nomura, Yasuaki; and Taguchi, Kikuo, 3,685,725.

Kabushiki Kaisha Ricoh: *See—*
Imai, Tadayuki, 3,685,419.
Umahashi, Minoru, 3,686,483.

Kabushiki-Kaisha Shashin Kagaku Kamigyo-ku: *See—*
Wada, Koji; and Ishida, Akira, Kyoto, 3,685,726.

Kacarb Products Corporation, mesne: *See—*
Orkin, Stanley S., 3,685,878.

Kaczmarek, Bernard; and Lander, Vern, to Workman Electronic Products, Incorporated. Circuit breaker switch. 3,686,601, Cl. 337-66.000.

Kadison, Leon A.: *See—*
Maguire, Eileen; and Kadison, Leon A., 3,686,016.

Kado, Masaru: *See—*
Nishimura, Tatsumi; Okuda, Itsuki; and Kado, Masaru, 3,686,191.

Kadono, Shinji, to Hitachi, Ltd. Semiconductor memory. 3,686,515, Cl. 307-238.

Kaetsu, Isao: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Kaga, Sumihiro: *See—*
Hobo, Nobuhito; Natsume, Yoshimi; and Kaga, Sumihiro, 3,685,526.

Kaiser, Carl; and Zirkle, Charles L., to Smith Kline & French Laboratories. 5-Vinyl-5H-di benzo (a,d) cycloheptenes. 3,686,335, Cl. 260-649.00r.

Kakiuchi, Tokusaburo; Ando, Akira; Akiyama, Hideaki; and Jinsenji, Sei, to Ricoh Co., Limited. Magnetic tape transportation device for use in tape recorder using miniature casette. 3,685,767, Cl. 242-199.000.

Kalamazoo Manufacturing Company: *See—*
De Pierre, Robert J., 3,685,125.

Kalart Company Inc., The: *See—*
Castedello, William, 3,685,893.

Kalle Aktiengesellschaft: *See—*
Fick, Herbert, 3,685,425.
Gurtler, Edgar, 3,686,060.

Kaman Aerospace Corporation: *See—*
Flannelly, William G., 3,685,314.

Kamaria, Georgy Mikirtychevich: *See—*
Adaev, Evgeny Ivanovich; Blinov, Alexander Vasilievich; Kamaria, Georgy Mikirtychevich; Alexandrovich, Novoslelov Viktor; and Yakimenko, Leonid Markovich, 3,685,121.

Kanai, Kazumichi: *See—*
Otsuka, Eiji; Kanai, Kazumichi; and Inoue, Shigeru, 3,686,305.

Kane, John J. Hole-aligning tool. 3,685,126, Cl. 29-254.000.

Kaneko, Tamaki; and Mizuno, Katsumi, to Ricoh Co., Ltd. Ink forming device for offset printing machine. 3,685,444, Cl. 101-217.000.

Kansas State University Research Foundation: *See—*
Meyer, Ronel M.; and Bartley, Erle E., 3,686,416.

Kantor, Itzhak, to Plasson Maagan Michael Industries, Ltd. Multi-supported movable trough-controlled waterer. 3,685,495, Cl. 119-81.

Kao Soap Co., Ltd.: *See—*
Hattori, Kenichi; Yamakawa, Tyoji; and Tuji, Akitoshi, 3,686,133.
Kawada Tsukasa; Suzuki, Susumu; and Matsui, Nobuya, 3,686,240.

Kappelman, Benjamin O.; and Vance, Marion I. Device for harvesting randomly grown plants. 3,685,263, Cl. 56-1.000.

Karecki, Marion R.; Chastain George R.; and Barnes, Thomas R., to Docutel Corporation. Credit card automatic currency dispenser. 3,685,690, Cl. 221-218.000.

Karel, George M., to All-O-Matic Manufacturing Corporation. Coupling member for automatic transmission devices. 3,685,861, Cl. 285-382.000.

Karle, Franklin J.; and Langer, Horst G., to Dow Chemical Company, The. Differential thermal analysis cell assembly. 3,685,344, Cl. 73-15.00b.

Karpman, David Bentxionovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich, 3,686,522.

Karsnak, George D., to U. S. Engineering Company, Inc. Ram head and adjustable connector combination. 3,685,341, Cl. 72-450.000.

Kasahara, Riichiro, to New Cosmos Electric Company, Limited. Gas-alarming device. 3,686,655, Cl. 340-237.00r.

Kashii, Kenjiro. Method for ionophoresis of a dilute electrolyte solution. 3,686,088, Cl. 204-180.00r.

Kassay, Andrew W.: *See—*
Culkowski, Edwin M.; Gore, Donald B.; and Kassay, Andrew W., 3,686,105.

Kasschau, Kenneth, to Westinghouse Electric Corporation. Automatically set pressure dump valve. 3,685,532, Cl. 137-107.000.

Katcha, Jay R., to Robertshaw Controls Company. Thermostatic flow control device. 3,685,730, Cl. 236-21.000.

Kato, Takeshi: *See—*
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, 3,686,167.

Kaupp, Norbett H., to Xerox Corporation. Duplicating method and apparatus. 3,685,896, Cl. 355-3.000.

Kavanaugh, Paul K.; and Boehly, Michael A., to Stromberg-Carlson Corporation. Supervisory signalling in PCM telephone system. 3,686,443, Cl. 179-15.0b.

Kawada Tsukasa; Suzuki, Susumu; and Matsui, Nobuya, to Kao Soap Co., Ltd. Process for producing cocoa butter substitute from palm oil described and claimed therein. 3,686,240, Cl. 260-409.000.

Kawaguchi, Harold H., to Physio-Control Corporation. Defibrillation electrode pad and package therefor. 3,685,645, Cl. 206-63.20r.

Kawai, Hisasi; and Amaki, Masami, to Nippondense Kabushiki Kaisha. Signal generator for a flasher type directional indicator. 3,686,583, Cl. 331-57.000.

Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Slider holder. 3,685,814, Cl. 269-49.000.

Kawamura, Toshiki; Ohneda, Tohru; Nomura, Yasuaki; and Taguchi, Kikuo, to Kabushiki Kaisha Haltori Tokeiten. Controlling mechanism for calculating machine. 3,685,725, Cl. 235-62.00f.

Keberle, Wolfgang; Hornig, Heinz; and Sinn, Gustav, to Farbenfabriken Bayer Aktiengesellschaft. Production of elastic polyurethane filaments. 3,686,387, Cl. 264-184.000.

Keim, Gerald, to Hercules Incorporated. Terpolymers of diallylamine. 3,686,151, Cl. 260-79.30a.

Keim, Wilhelm: *See—*
Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, 3,686,159.

Kelem, Tester S.; and Reade, Stephen E., to United States of America, Army. Frequency detector. 3,686,565, Cl. 324-79.00d.

Keller, Arthur E.; and Earles, Claude W. Vehicle speed regulation, control means, and warning system. 3,686,628, Cl. 340-53.000.

Keller, Thomas Charles, to Timken Company, The. Unitized seal assembly. 3,685,841, Cl. 227-37.000.

Keller, Wolfgang; and Reuschel, Konrad, to Siemens Aktiengesellschaft. Method for crucible-free zone melting using a displaced heater. 3,685,973, Cl. 23-301.0sp.

Kellogg, Lillian M.; and Liebert, Nancy B., to Eastman Kodak Company. Photographic processes. 3,685,997, Cl. 96-107.000.

Kelly Company, Inc.: *See—*
Wiener, Thomas J.; and Kuhns, Robert C., 3,685,077.

Kelly, Edward T.; and McClain, Keith D., to Dynamics Corporation of America. Grille. 3,685,428, Cl. 98-110.000.

Kelly, Samuel T.: *See—*
Haskins, Lauren D.; and Kelly, Samuel T., 3,685,732.

Kelly, Vincent J.; and Fry, William G., to Gerber Products Company. Stabilized wet baby food. 3,685,999, Cl. 99-100.000.

Kemper, Clyde F.: *See—*
Cover, Paul F.; Rife, John W.; Kemper, Clyde F.; and Reed, Donald E., 3,685,519.

Ken-Bar Tool & Engineering, Inc.: *See—*
Lamm, Merritt Otis, 3,685,340.

Kennecott Copper Corporation: *See—*
Walter, Kenneth E., 3,686,563.

Kent, Roger E.: *See—*
McIlvaine, Robert L.; and Kent, Roger E., 3,685,261.

Kepka, Alfred Anton Franz; and Kepka, Herwig Gunther. Safety handle for a ski pole and safety knob for such handle. 3,685,850, Cl. 280-11.37h.

Kepka, Herwig Gunther: *See—*
Kepka, Alfred Anton Franz; and Kepka, Herwig Gunther, 3,685,850.

Kernforschungsanlage Julch G.m.b.H.: *See—*
Doose, Conrad, 3,686,422.

Kernforschungsanlage Julich G.m.b.H.: *See—*
Doose, Conrad; and Sassin, Wolfgang, 3,686,423.

Kerr-McGee Chemical Corporation: *See—*
Lai, San-Cheng, 3,686,083.

Kerwood, Joseph Edward: *See—*
Coran, Aubert Yaucher; and Kerwood, Joseph Edward, 3,686,169.

Kessler, Gerald. Low-friction abrasion-resistant plastic weatherstrip. 3,685,206, Cl. 49-489.000.

Khan, Ausat Ali, to Du Pont de Nemours, E. I., and Company. Composition and process for preparing cross-linked fluoro-polymer products. 3,686,154, Cl. 260-87.50a.

Kidwell, Roger L., to Monsanto Company. Alkyl vicinal hydroxy alkoxy ether maleate compounds and compositions. 3,686,282, Cl. 260-485.00g.

Kilmer, Charlie C.: *See—*
Menikheim, Virginia C.; and Kilmer, Charlie C., 3,686,017.

Kilpper, Gerhard: *See—*
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, 3,686,339.

Kimberlin, Charles N., Jr.; and Gladrow, Elroy M., to Esso Research and Engineering Company. Hydrocarbon conversion catalyst. 3,686,121, Cl. 252-455.000.

Kimberly-Clark Corporation: *See—*
Burger, William H.; and Rightor, Edward, Jr., 3,685,818.
Davis, Leonard P.; and Elliott, Robert M., 3,685,930.
Hubin, Anthony S.; and Hirschy, Harlan W., 3,686,050.

Kimmel, Ray D., to Raymond Lee Organization, Inc., The. Revolving gun cabinet. 3,685,661, Cl. 211-64.000.

Kimura, Osamu: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, 3,686,132.

Kinderman, Richard J.: *See—*
Manner, Warren R.; and Kinderman, Richard J., 3,686,049.

King, Charles S. W.; and Pierce, John H., to Bouligny, R. H., Inc. Winding machine drive and tension control system. 3,685,755, Cl. 242-45.000.

King, Michael F., to General Motors Corporation. Transmission control having a shift overlap valve. 3,685,370, Cl. 74-645.000.

Kinkade, Robert G.: *See—*
Andersen, Stanley R.; and Kinkade, Robert G., 3,686,640.

Kiovsky, Thomas E.; and Petzny, Wilfried J., to Shell Oil Company. Regeneration of metal halide catalyst. 3,685,962, Cl. 23-97.000.

Kirby, Herbert D.; Nearhoof, George L.; and Glenn, Culler Jimmie, to KMS Industries, Inc. Exposure calculator and filter device for darkroom color photography. 3,685,900, Cl. 355-32.000.

Kirch, Lawrence S., to Rohm and Haas Company. Preparation of halosulfonylbenzoyl halides. 3,686,301, Cl. 260-544.00m.

Kirchmayr, Rudolf; and Rody, Jean, to Ciba-Geigy Corporation. Triazolyl-coumarins. 3,686,202, Cl. 260-308.00a.

Kisling, James W., III, to Schlumberger Technology Corporation. Mechanical jar. 3,685,599, Cl. 175-304.000.

Kita, Yasuo; and Hayashi, Tadao, to Shimadzu Seisakusho Ltd. Fluid flow control valve. 3,685,537, Cl. 137-493.600.

Kitaoka, Kouichi; and Ichihara, Taku, to Tokyo Shibaura Electric Co., Ltd. FM-FM audio multiplex unit for television broadcasting system. 3,686,431, Cl. 178-5.80r.

Kleeger, Allan A., to Electrohome Limited. A.C. balance control networks. 3,686,582, Cl. 330-142.000.

Kleinhan, Herbert. Cigarette holder. 3,685,522, Cl. 131-198.00a.

Kleinwachter, Hans. Momentum spectrometer. 3,686,500, Cl. 250-41.9me.

Klender, Gerald J.: *See—*
Hinckley, Paul D.; Klender, Gerald J.; and Lambiott, Jerry F., 3,686,362.

Klimashin, Petr Sergeevich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Klockow, Michael: *See—*
Unger, Richard; Seitz, Georg; Klockow, Michael; and Mehrhof, Werner, 3,686,164.

Kmecak, Ronald A.: *See—*
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,686,340.

KMS Industries, Inc.: *See—*
Kirby, Herbert D.; Nearhoof, George L.; and Glenn, Culler Jimmie, 3,685,900.

Knapp, Furn F., Jr.: *See—*
Nicholas, Harold J.; and Knapp, Furn F., Jr., 3,686,235.

Knapp, Willard E.: *See—*
Ball, Frank C.; and Knapp, Willard E., 3,685,544.

Knapsack Aktiengesellschaft: *See—*
Opitz, Wolfgang, 3,686,302.

Knell, Martin; and Berger, Edward, to Ciba-Geigy Corporation. Preparation of polyfluoroalkyl esters of fumaric and related acids. 3,686,281, Cl. 260-485.00f.

Knights, Evord F., to Union Oil Company of California. Hydrocarbon olefin oxidation. 3,686,287, Cl. 260-497.00a.

Kniprath, Elmar, to Norddeutsche Affinerie. Redox precipitation of non-ferrous heavy metals from aqueous solution. 3,685,965, Cl. 423-605.0on.

Knowles, Richard N. Certain substituted cyclohexyl isocyanates and thioisocyanates. 3,686,255, Cl. 260-453.00a.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain substituted cyclohexyl ureas and thiouresa. 3,686,303, Cl. 260-553.00r.

Knowles, Richard N.; and Arthur, Wilfred J., to Du Pont de Nemours, E. I., and Company. A-acetylcyclohexylamine repellants and method of use. 3,686,415, Cl. 424-320.000.

Kobashi, Uichiro; Aiki, Shigeo; and Hirai, Akiyoshi. Method for control of a power brake and apparatus embodying said method. 3,685,289, Cl. 60-54.50p.

Kobe Steel, Ltd.: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Odaka, Takashi; and Suda, Tetuo, 3,685,929.

Kock, Bruce A. Watch escapement mechanism. 3,685,282, Cl. 58-118.000.

Koe, Billie Kenneth. p-Chlorobenzyl compounds and their serotonin lowering ability. 3,686,414, Cl. 424-319.000.

Koeber, Henry J., to Bell & Howell Company. Motion picture camera lap dissolve mechanism. 3,685,891, Cl. 352-91.000.

Koehler, Heinrich P., to Rockwell Manufacturing Company. Rotary hammer or the like. 3,685,594, Cl. 173-48.000.

Koehler, Waldemar: *See—*
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, 3,686,339.

Koehring Company: *See—*
Wilke, Rajd A., 3,685,540.

Koenig, Karl-Heinz: *See—*
Sanne, Walter; Koenig, Karl-Heinz; Pommer, Ernst-Heinrich; and Stummeyer, Herbert, 3,686,399.

Kohama, Mashiro. Centrifugal separation apparatus for sewage. 3,685,721, Cl. 233-7.000.

Kohler, Rudolf: *See—*
Fischer, David; Kohler, Rudolf; Roos, Hugo; and Merker, Joachim, 3,685,845.

Kohn, Gustave K.; and McMurtry, Randolph J., to Chevron Research Company. Boroxarophenanthrene as fungicides. 3,686,398, Cl. 424-185.000.

Koivunen, Erkki A., to General Motors Corporation. Fully compensated brake anti-lock sensor. 3,685,619, Cl. 188-181.00a.

Kolakowski, Alfred W.: *See—*
Gestler, David J.; Kovats, Zoltan; and Kolakowski, Alfred W., 3,685,353.

Kollmorgen Corporation: *See—*
Henry-Baudot, Jacques, 3,686,521.

Kollus, Samuel M. Self-sealing dispensing cap. 3,685,701, Cl. 222-213.000.

Kolpakov, Serafim Vasilievich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Komatsu, Masahiro: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.

Kondo, Toshio: *See—*
Omura, Itiro; Kondo, Toshio; and Tamura, Hifumi, 3,686,499.

Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich. Rotor with a liquid-cooling winding for an electrical machine. 3,686,522, Cl. 31054.000.

Kopineck, Hermann-Josef: *See—*
Bottcher, Wolfgang; Kopineck, Hermann-Josef; Schlusnus, Karl-Heinz; and Sommerkorn, Gernot, 3,685,348.

Korb, Albert N. Interlock system for darkrooms and film storage bins. 3,686,510, Cl. 307-149.000.

Korblock Corporation: *See—*
Palmer, Robert A., 3,685,244.

Koretsky, Alexandr Filippovich: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Fuzaeva, Ekaterina, 3,68,099.

Korngold, Emmanuel; and Selegny, Eric. Method of separation of ions from a solution. 3,686,089, Cl. 204-180.00p.

Kosaka, Asahiro, to Matsushita Electric Industrial Co., Ltd. Instructional tape recorder. 3,685,171, Cl. 35-35.00c.

Kostel, Paul Steven; Borgen, William Earl; and Willert, Richard Joseph, to M-Tron Industries Inc. Electronic air purifier. 3,685,258, Cl. 55-129.000.

Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, to Institut Gornogo Dela Sibiraskogo Otdelenia AN. Device for making holes in te ground by packing the latter. 3,685,597, Cl. 175-19.000.

Kovach, Stephen M.: *See—*
Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., 3,686,340.

Kovats, Zoltan: *See—*
Gestler, David J.; Kovats, Zoltan; and Kolakowski, Alfred W., 3,685,353.

Kowal, Leonard J., to Imperial-Eastman Corporation. Tube bender. 3,685,335, Cl. 72-319.000.

Kowell, Edward L., to Pomeroy, J. A., & Company. Concrete pouring form accessory. 3,685,782, Cl. 249-86.000.

Kraft, Paul: *See—*
Yu, Arthur J.; and Kraft, Paul, 3,686,363.

Krafthefer, Kerry M.: *See—*
Krehbiel, John H., Sr.; and Krafthefer, Kerry M., 3,686,625.

Kramer, Jerome D., to Howard Displays, Inc. Turnable display device. 3,685,664, Cl. 211-131.000.

Kratz, Philip De C.; and Bondarovich, Henry A., to International Flavors & Fragrances, Inc. Use of 1-(prop-1'-enyl)-3,4,5 trimethoxy benzen to alter the flavor of food. 3,686,004, Cl. 99-140.00r.

Krause, Frederick A., Associates, Inc.: *See—*
Hoffman, Bernard L., 3,685,338.

Krebs, Jean-Pierre: *See—*
Denel, Jean; Krebs, Jean-Pierre; and Santa-Maria, Enrique, 3,686,458.

Krechel, Joseph L. Unloader valve assembly. 3,685,533, Cl. 137-117.000.

Krehbiel, John H., Sr.; and Krafthefer, Kerry M., to Molex Products Company. Solder resist. 3,686,625, Cl. 339-275.00b.

Kressley, Leonard J., to Dow Chemical Company, The. Self-leveling grateless stack gas scrubber. 3,685,262, Cl. 55-390.000.

Kring, Olof; and Yngve, Stig G. J., to AB Gitson-System. Copying apparatus. 3,685,904, Cl. 355-74.000.

Krings, Peter: *See—*
Werdehausen, Achim; and Krings, Peter, 3,686,128.

Kroeger, James K., to Sola Basic Industries, Inc. Telephone calling-station identification. 3,686,440, Cl. 179-5.500.

Krone GmbH: *See—*
Fruhauf, Waldemar, 3,686,577.

Kroos, Friedrich-Karl, to Siemens Aktiengesellschaft. Logic circuit for providing a short signal transit time as an integrated element. 3,686,512, Cl. 307-218.000.

Kropp, Paul J., to Procter & Gamble Company, The. Perfume compositions of para-menth-3-en-2-one, 4-caranone and irradiation products of 4-caranone. 3,686,097, Cl. 252-522.000.

Krups, Robert, Solingen-Wald, Firma: *See—*
Baumann, Kurt, 3,685,149.

Krusche, Alfred, to Linde Aktiengesellschaft. Overload system for a hydrostatic-drive apparatus. 3,685,290, Cl. 60-53.0ww.

Krutz, Ronald L.; and Irwin, Thomas J. Pulsing mechanism. 3,686,507, Cl. 307-106.000.

Kugler, Ralph W.: *See—*
Levine, Samson P.; Kugler, Ralph W.; and Cander, Anthony J., 3,685,376.

Kuhas, Engelbert: *See—*
Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, 3,686,311.

Kuhlthau, Hans-Peter: *See—*
Raue, Roderich; and Kuhlthau, Hans-Peter, 3,685,956.

Kuhns, Robert C.: *See—*
Wiener, Thomas J.; and Kuhns, Robert C., 3,685,077.

Kukucka, William P.: *See—*
Turner, Lyman H.; Kukucka, William P.; and Summers, James E., 3,685,712.

Kume, Toyohiko: *See—*
Hoffmann, Hellmut; Scheinpflug, Hans; Kume, Toyohiko; and Yasui, Kazuomi, 3,686,369.

Kumiai Chemical Industry Co., Ltd.: *See—*
Nishimura, Tatsumi; Okuda, Itsuki; and Kado, Masaru, 3,686,191.

KUNDO Kieninger & Obergefell Fabrik fur Technische Laufwerke und Apparate: *See—*
Fehrenbacher, Wolfgang, 3,685,280.

Kunihiro, Haruo: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, 3,686,132.

Kunihiro, Nobuko: *See—*
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, 3,686,350.

Kuper, Heinrich: *See—*
Ortel, Gerhard, 3,686,057.

Kuraray Co., Ltd.: *See—*
Ohfuji, Yoshio, 3,686,149.

Kurita Industrial Co., Ltd.: *See—*
Hiroshi, Ueki, 3,686,123.

Kusters, Eduard. Impression cylinder for gravure printing press. 3,685,443, Cl. 101-153.000.

Kutlyar, Vladimir Petrovich: *See—*
Bezugly, Stanislav Leontievich; Sidorsky, Mikhail Andreevich; and Kutlyar, Vladimir Petrovich, 3,686,559.

Kutsuwada, Noboru; and Nagamatsu, Katsumi, to Canon Kabushiki Kaisha. Device for preventing scattering of developer. 3,685,485, Cl. 118-637.000.

Kuznetsov, Leonid Georgievich: *See—*
Niskovskikh, Vitaly Maximovich; Dyshkant, Viktor Fedorovich; and Kuznetsov, Leonid Georgievich, 3,685,571.

Labbe, Francis A. M., to Molins Machine Company Limited. Tobacco smoke filter. 3,685,523, Cl. 131-261.00b.

Ladany, Shaul. Device for the graphical solution of simultaneous equations. 3,685,724, Cl. 235-61.00b.

Lafon, Louis, to Societe Anonyme dite: Orsymonde. Novel normolipemiant agents. 3,686,271, Cl. 260-471.00r.

Lafon, Louis, to Societe ORSYMONDE. 2,4,6-Trihydroxy chalcone derivatives. 3,686,319, Cl. 260-590.000.

Lagerstrom, Robert C., to National Union Electric Corporation. Shag rug tool. 3,685,089, Cl. 15-369.000.

Lagoutte, Serge, to Societe d'Etudes Verrieres Appliquees "S.E.V.A.". Apparatus for forming hollow bodies. 3,685,938, Cl. 425-185.000.

Lai, San-Cheng, to Kerr-McGee Chemical Corporation. Method for electrodepositing manganese. 3,686,083, Cl. 204-105.00m.

Laitram Corporation, The: *See—*
Lapeyre, James M., 3,685,098.

Laleuf, Rene; and Nechtschein, Jacqueline, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for oxidizing mercaptans to disulfides in the presence of solid catalytic masses. 3,686,094, Cl. 208-206.000.

Lamb, David Robert: *See—*
Steigman, Peter Edward; Badcock, Frank Robert; and Lamb, David Robert, 3,686,544.

Lambert, Arthur H., to Comco Supply, Inc. Apparatus for trimming electrical resistors. 3,685,209, Cl. 51-14.000.

Lambiott, Jerry F.: *See—*
Hinckley, Paul D.; Klender, Gerald J.; and Lambiott, Jerry F., 3,686,362.

Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Rotary piston internal combustion engine. 3,685,922, Cl. 418-113.000.

Lamm, Merritt Otis, to Ken-Bar Tool & Engineering, Inc. Metal forming method and apparatus. 3,685,340, Cl. 72-398.000.

Lamparter, Hansruedi; and Spescha, Gelli Anton, to Rieter Machine Works, Ltd. Apparatus for controlling the temperature of an inductively heated draw roll. 3,686,460, Cl. 219-10.770.

Lamphere, Jack C.: *See—*
Nankee, Robert J.; Lamphere, Jack C.; and Nelson, Rodney A., 3,686,024.

Lander, Vern: *See—*
Kaczmarek, Bernard; and Lander, Vern, 3,686,601.

Landwehrkamp, Hans; Schreyer, Frinz; and Handschuch, Karl, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Thread clamping, releasing, and feeding mechanism for spinning apparatus. 3,685,267, Cl. 57-34.00r.

Lang, Marshall Ira, to Bajer Industries Incorporated. Suspended ceiling system including a grid network. 3,685,235, Cl. 52-39.000.

Langer, Horst G.: *See—*
Karle, Franklin J.; and Langer, Horst G., 3,685,344.

Lanier, Carroll W., to Ethyl Corporation. Process for producing high purity straight chai aluminum alkyl compounds from olefin mixtures containing vinyl olefins and non-vinyl olefins. 3,686,250, Cl. 260-448.00a.

Laosig, Harry; and Grosshauser, Anton, to Fordertechnik Hamburg Harry Lassig. Method of welding sheets, particularly shrink-on-sheets which have been wrapped around a pallet cargo aud apparatus therefor. 3,685,233, Cl. 53-33.000.

Lapeyre, James M., to Laitram Corporation, The. Shrimp separating and peeling machine. 3,685,098, Cl. 17-73.000.

Larsen, Stein: *See—*
Fredrikson, Bengt; Larsen, Stein; and Suvanto, Erkki, 3,685,570.

Lata, Ilie: *See—*
Szumilas, Wladislaw; Adam, Macedon Emil; Lata, Ilie; and Muresan, Gheorghe, 3,685,793.

Lauer, Karl; Budka, Heinz-Gunter; and Stoeck, Georg, to Boehringer Mannheim GmbH. Process for the chromatographic separation of multi-component mixtures. 3,686,117, Cl. 210-31.00c.

Launay, Pierre. Method of advancing a prestressed concrete bridging structure. 3,685,224, Cl. 52-173.000.

Lavrov, Alexandr Sergeevich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, AnatolyIvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Lawrence, Norman F., to General Foods Corporation. Moisture resistant sugar filaments. 3,686,000, Cl. 99-134.00r.

Layman, Lee R., to Monsanto Company. Stacking lightweight plastic articles. 3,685,671, Cl. 214-6.0ba.

Layne, Gilbert S.; and Huml, James O., to Dow Chemical Company, The. Removing metal carbides form furnace systems. 3,685,984, Cl. 75-68.00b.

Lazott, James B.: *See—*
Shirn, George A.; and Lazott, James B., 3,686,473.

Le Grand, Donald G.: *See—*
Gaines, George L., Jr.; and Le Grand, Donald G., 3,686,355.

Le Voy's Inc.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,685,517.

Leach, Irby H. Shredded polystyrene foams. 3,686,068, Cl. 161-168.000.

Lear Siegler, Inc.: *See—*
Caslow, Joseph H.; Huber, Melvin F.; and Wootten, John A., 3,685,697.
Cooper, Jack A., 3,686,570.

Leclair, Albert W.; and Benbrook, Charles H., to Nashua Corporation. Thermographic copy sheet containing a benzo hydrazone. 3,685,996, Cl. 96-101.000.

Ledbetter, Harvey D.: *See—*
Lindblom, Robert O.; and Ledbetter, Harvey D., 3,686,018.

Lee, Alwyne. Fluid control valve. 3,685,286, Cl. 60-53.00r.

Lee, Charles A., to Southeastern Products, Inc., mesne. Backing material for laminated products. 3,686,021, Cl. 117-76.00t.

Lee, Daeyong, to General Electric Company. Method of producing titanium alloys having an ultrafine grain size and product produced thereby. 3,686,041, Cl. 148-11.50r.

Lee John T., to Magnetics, Inc. Magnetic core with electrical insulation. 3,686,599, Cl. 336-96.000.

Lee, Thomas Brian: *See—*
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,686,320.
Fitzmaurice, Colin; and Lee, Thomas Brian, 3,686,412.

Leeds & Northrup Company: *See—*
Elias, Laurence F.; and Magee, James H., 3,686,665.
McMullan, Samuel J.; and Williams, Albert J., Jr., 3,686,568.

Leedy, Nelson J.: *See—*
Hansen, James H.; Leedy, Nelson J.; and Slonaker, Robert O., 3,685,978.

Leeming, Peter R.: *See—*
Canas-Rodriquez, Antonio; and Leeming, Peter R., 3,686,182.

Leeming, Peter Rodway: *See—*
Gadsby, Brian; Leeming, Peter Rodway; and Thomas, Michael Barrie, 3,686,291.

Lefort, Marcel: *See—*
Bazouin, Andre; and Lefort, Marcel, 3,686,252.

Lehman, Kenneth W. Game apparatus including target, projectile, and planing chart. 3,685,826, Cl. 273-95.00r.

Lehmann, Walter G., to Polaroid Corporation. Photographing apparatus and process employing a filter-applicator. 3,685,412, Cl. 95-13.000.

Lehmann, Werner: *See—*
Aebersold, Rene; and Lehmann, Werner, 3,685,441.

Leibach, Heinrich; Schweikl, Ludwig; and Lottes, Paul, to Motoren- und Turbinen-Union. Thrust nozzle whose gas discharge cross-section is adapted to be adjusted by means of adjusting flaps. 3,685,738, Cl. 239-265.390.

Lemelson, Jerome H. Area surveillance system. 3,686,434, Cl. 178-6.60a.

Lenke, Dieter: *See—*
Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, 3,686,311.

Leonard, Henry K.: *See—*
Gach, Peter P.; and Leonard, Henry K., 3,685,676.

Leonard, Merrill G.: *See—*
Lockie, Arthur M.; and Leonard, Merrill G., 3,686,603.

Leonard, Murray, to Gulton Industries, Inc. Electronic compensaton for optical system focal length variation. 3,686,437, Cl. 178-7.600.

Lepetit S.p.A.-Gruppo per la Ricerca: *See—*
Maggi, Nicola; and Sensi, Piero, 3,686,166.

Leslie, Morgan, Furniture Limited: *See—*
Morgan, Leslie, 3,685,063.

Letters, Hope Lowrie, to Sayers, Ben, Limited. Method of putting a golf club shaft to a head. 3,685,135, Cl. 29-428.000.

Lever Brothers Company: *See—*
Boldingh, Jan; Heslinga, Lammert; Schmidl, Ernst; and Syrovataka, Rudolf, 3,686,127.
Requena, Jorge Federico, 3,685,205.
Van Dorp, David Adriaan; Akroyd, Philip; and Mindt, Lothar, 3,686,003.
Weil, Ira, 3,686,098.

Levine, Samson P.; Kugler, Ralph W.; and Cander, Anthony J., to Westinghouse Electric Corporation. Apparatus for making a laminated fibrous strip. 3,685,376, Cl. 83-87.000.

Levy, Moshe: *See—*
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,269.
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,270.

Lewis, Alan G. Tone arm automatic reset mechanism for an audio-visual device. 3,685,892, Cl. 353-19.000.

Lewis, John C., to Park-Ohio Industries Inc. Multiple inductor unit for induction heat device. 3,686,459, Cl. 219-10.570.

Ley, Kurt; Eholzer, Ulrich; and Seng, Florin, to Farbenfabriken Bayer Aktiengesellschaft. Quinoxaline-di-N-oxide-lactones and their production. 3,686,181, Cl. 260-250.00r.

Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. 2-Isothiouronium-methyl-3-carboxylic acid amido-quinoxaline-1,4-di-n-oxide halides as antibacterial agents and pharmaceutical cmpositions comprising. 3,686,401, Cl. 424-250.000.

Libbey-Owens-Ford Company: *See—*
Moyer, Henry F.; and Revells, Robert G., 3,685,714.

Lichtenwalter, Carl G.: *See—*
Marx, Norbert M.; and Lichtenwalter, Carl G., 3,685,756.

Licklíter, Robert Paul; and Reeves, John F., to Flangeklamp Corporation. Spacer assembly for holding a pair of panel connectors in a wall structure. 3,685,230, Cl. 52-677.000.

Liddel, Harold G.: *See—*
Dunn, James L., Jr.; and Liddel, Harold G., 3,685,959.

Liebert, Nancy B.: *See—*
Kellogg, Lillian M.; and Liebert, Nancy B., 3,685,997.

Liepelt, Klaus - J.: *See—*
Walther, Hans - J.; and Liepelt, Klaus - J., 3,685,650.

Lindblom, Robert O.; and Ledbetter, Harvey D., to Dow Chemical Company, The. Method of metallizing an organic substrate. 3,686,018, Cl. 117-47.00a.

Linde Aktiengesellschaft: *See—*
Funke, Robert, 3,685,330.
Krusche, Alfred, 3,685,290.
Link, Edwin A.; and Sankey, Edward L., to RTE Corporation. Current interrupting safe break terminator. 3,686,604, Cl. 337-201.000.
Link Engineering Company: *See—*
Frederick, Robert E., 3,685,470.
Linotype and Machinery Limited: *See—*
Surbrook, Louis M., 3,685,820.
Littau, Eugene G. Articulated frame for double row agricultural harvester. 3,685,264, Cl. 56-209.000.
Littell, Ruddy: *See—*
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,686,213.
Little, William E., to Case, J. I., Company. Hydraulic cylinder. 3,685,398, Cl. 92-165.000.
Litzler, Alfred: *See—*
Milicevic, Branimir; and Litzler, Alfred, 3,685,955.
Livezey, John P.; and Rosser, Daniel B., to General Electric Company. Flexible resilient member for applying a clamping force to thyristor units. 3,686,541, Cl. 317-234.00r.
Livingston, William L., to Factory Mutual Research Corporation. Discharge head for a fixed fire-extinguishing system. 3,685,588, Cl. 169-37.000.
Lloyd, Samuel H., III, to Santa Fe International Corporation. Column stabilized stinger. 3,685,305, Cl. 61-72.300.
Loblick, Dermont F. Dockboard lip raising mechanism. 3,685,076, Cl. 14-71.000.
Lockie, Arthur M.; and Leonard, Merrill G., to Westinghouse Electric Corporation. Electrical connector. 3,686,603, Cl. 337-201.000.
Loder, Wallace R., Jr.: *See—*
Vis, Jan H.; and Loder, Wallace R., Jr., 3,685,976.
Loev, Bernard, to Smith Kline & French Laboratories. 2-(Di-lower alkylaminoalkyl)-2,3,4,5- tetrahydro-5-phenyl-1H-2-benzazepin-1-ones. 3,686,165, Cl. 260-239.30b.
Loewe Opta GmbH: *See—*
Dennewitz, Rolf Dieter, 3,685,409.
Loewy, Gene. Device for operating an apparatus for providing prestations. 3,685,625, Cl. 194-4.000.
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, to Burroughs Corporation. Multiprogram digital processing system with interprogram communication. 3,686,641, Cl. 40-172.500.
Logerot, Jean-Marie: *See—*
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weiaz, Michel, 3,685,988.
Logistics Industries Corporation: *See—*
Goldman, Joseph, 3,685,719.
Lohf & Tillipaul, Firma: *See—*
Rohrle, Anto, 3,685,505.
Lohr, Delmar Frederick, Jr.; Crane, Grant; and Beckman, Joseph A., to Firestone Tire & Rubber Company, The. Chlorinative dehydrogenation of hydrocarbons. 3,686,345, Cl. 260-677.00a.
Lohrer, Josef, to Hurth Carl Maschinen-und Zahnsadfabrik. Gearlike tool with helically arranged grooves. 3,685,112, Cl. 29-103.00c.
Lombardi, Aurelio; Anelli, Pietro; and Bianchi, Gianfranco, to Industrie Phirelli Societa per Azioni. Multiple strand conductor with increased contact resistance. 3,686,428, Cl. 174-128.000.
Looms, Charles M. Bolt hole drilling jig for elevator installation. 3,685,916, Cl. 408-72.000.
Lorenz, Howard I.; and Posser, Eugene H. Bit guide and protector incorporating an arrangement for initially inserting or replacing of bit jets. 3,685,600, Cl. 175-307.000.
Lottes, Paul: *See—*
Leibach, Heinrich; Schweikl, Ludwig; and Lottes, Paul, 3,685,738.
Loucks, Millard U., to Minnesota Mining and Manufacturing Company. Hydrogen embrittlement prevention. 3,686,129, Cl. 252-147.000.
Louzos, Dometrios V., to Union Carbide Corporation. Maganese fibers useful for galvanic cell electrodes. 3,685,983, Cl. 175-.50r.
Loveday, Harry W.; and Whittaker, Jack D., to Greenbank Engineering Company Limited. Machines for drying sheets of paper or like material. 3,685,167, Cl. 34-66.000.
Lowdermilk, Marvin J.: *See—*
Boron, Joseph; and Lowdermilk, Marvin J., 3,685,359.
Loyd, Raymond L., to General Electric Company. Air-conditioner air-directing mechanism. 3,685,427, Cl. 98-94.000.
Lubin, Irving, to Globe-Union Inc. Resistive coating compositions and resistor elements produced therefrom. 3,686,139, Cl. 252-511.000.
Lubrizol Corporation, The: *See—*
Hoke, Donald Irvin, 3,686,306.
Luby, John J.: *See—*
Pemberton, Paul E.; and Luby, John J., 3,685,567.
Lucas, Robert G.: *See—*
Frye, Kenneth G.; Lucas, Robert G.; and Rohosy, Soma M., 3,685,379.
Ludwig, Albert P.: *See—*
Carpenter, Mark Richard; and Ludwig, Albert P., 3,685,328.
Ludy, William F., Jr., to Profressive Machine Company, Inc. System including applicator for spraying liquid. 3,685,744, Cl. 239-552.000.
Luff, Peter Purnell: *See—*
White, Martin; and Luff, Peter Purnell, 3,686,022.
Lugo, Luigi: *See—*
Gualdi, Giorgio; Lugo, Luigi; and Reni, Cesare, 3,686,293.
Luker, John P.: *See—*
Hiatt, John C.; and Luker, John P., 3,686,372.
Lundquist, Burton R. Chilling consumer size food packages. 3,685,308, Cl. 62-60.000.
Lutterkort, Hans Heinz, to International Computers Limited. Stabilised power supply systems. 3,686,560, Cl. 321-18.000.
Lutz, F. Norman: *See—*
Wall, Charles A.; and Lutz, F. Norman, 3,685,271.
Lux, George K.; Ellis, James B.; and Schulze, John J., to Addressograph-Multigraph Corporation. Photoelectrostatic copying machine having lamps for exposing copy margins. 3,685,894, Cl. 355-3.000.
Lyness, Warren I.; and Thompson, James E., to Procter & Gamble Company, The. Carboxymethylated derivatives of di- and trisaccharide compounds and detergent compositions containing them. 3,686,124, Cl. 252-89.000.
Lynwood, Edward B.: *See—*
Caparone, Michael J.; Dykzeul, Theodore J.; Lynwood, Edward B.; and Braucksick, Henry C., 3,685,541.
M & T Chemicals, Inc.: *See—*
Considine, William J.; and Seltzer, Raymond, 3,686,196.
Passal, Frank, 3,686,239.
M-Tron Industries Inc.: *See—*
Kostel, Paul Steven; Borgen, William Earl; and Willert, Richard Joseph, 3,685,258.
Maas, Willem: *See—*
Duyfjes, Werner; and Maas, Willem, 3,686,419.
Mac Keigan, Thomas H., to Abex Corporation. Brake shoe clearance gage. 3,685,160, Cl. 33-181.0at.
MacGregor Lead Company: *See—*
Mitchener, Gary R., 3,686,135.
Machulsky, Petr Alexeevich: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Fufaeva, Ekaterina, 3,68,099.
MacLellan, James A.; and Wilson, John E., to Gorden, Sherritt Mines Limited. Thickener. 3,685,654, Cl. 210-97.000.
Macpherson, Roger, to American Tatra Inc. Apparatus for testing front wheel alignment. 3,685,161, Cl. 33-285.000.
Madsen, Ingvard Mosby: *See—*
Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, 3,685,927.
Maegawa, Harumi: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.
Magee, James H.: *See—*
Elias, Laurence F.; and Magee, James H., 3,686,665.
Magerlein, Helmut: *See—*
Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, 3,686,328.
Maggi, Nicola; and Sensi, Piero, to Lepetit S.p.A.-Gruppo per la Ricerca. 4-Desoxy rifamycin-SV and its preparation. 3,686,166, Cl. 260-239.03p.
Magne, Frank C.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,686,242.
Magnetics, Inc.: *See—*
Lee John T., 3,686,599.
Magneville, Pierre, to Institut Francais du Petrole, des Carburants et Lubrifiants. Device for detonating explosive charges in a liquid medium. 3,685,448, Cl. 102-24.000.
Maguire, Eileen; and Kadison, Leon A., to Crown City Plating Company. Conditioning of propylene polymers for electroless plating. 3,686,016, Cl. 117-47.00a.
Mahaffy & Harder Engineering Company: *See—*
Mahaffy, Reid A.; Dunkerley, James B.; and Posta, Joseph M., 3,685,251.
Mahaffy, Reid A.; Dunkerley, James B.; and Posta, Joseph M., to Mahaffy & Harder Engineering Company. Automatic packaging apparatus with improved means for cutting and contour trimming of packages. 3,685,251, Cl. 53-184.000.
Mahon, Michael J.: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.
Makhlouf, Joseph M.; and Porter, Samuel, Jr., to PPG Industries, Inc. Non-aqueous polymeric pseudo-dispersion. 3,686,111, Cl. 260-31.200.
Makinen, Alpo Eino, to Insinooritoimisto Alpo Makinen & Co. Method for hot-pressing sheets of substances containing lignocellulose. 3,686,383, Cl. 264-120.000.
Malchman, Franklin L.; and Radoi, William J., to ESB Incorporated. Pulse rate monitor and indicator system utilizing a burst pulse counter and a pulse internal counter. 3,686,634, Cl. 340-171.00r.
Malcolm, Andrew, Furniture Co., The: *See—*
Roloff, Walter Louis, 3,685,944.
Malen, Charles; Danree, Bernard; and Poscaud, Xavier, to Societe en Nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale. 2-Pyridinethioacetamides. 3,686,190, Cl. 260-294.80e.
Malkiewicz, Wladyslaw F., to Tenneco Inc. Five pass muffler. 3,685,616, Cl. 181-54.000.

Mallick, George T., Jr.; Carr, Walter J., Jr; and Miller, Robert C., to Westinghouse Electric Corporation. Multiple frequency magnetic field technique for differentiating between classes of metal objects. 3,686,564, Cl. 324-41.000.

Mallory, P. R., & Co., Inc.: *See—*
Blue, Philip L., 3,685,134.
Pearce, Godfrey R.; and Breeden, William J., 3,686,536.
Webster, Robert A., 3,686,538.

Malmstrom, Sven Erik, to Forsheda Gummifabrik AB. Seal between two parts, one of which is rotatable in relation to the other. 3,685,838, Cl. 277-25.000.

Mancy, Denise; Ninet, Leon; and Preud'Homme, Jean, to Rhone-Poulenc S.A. Antibiotic 11837 R.P. and process for its manufacture using streptomyces viridans. 3,686,396, Cl. 424-118.000.

Mangan, Joseph J. Expandable platform with building structures thereon. 3,685,221, Cl. 52-80.000.

Manger, Josef W. Push-pull moving coil loudspeaker having electromagnetic centering means. 3,686,446, Cl. 179-115.5dv.

Mann, Joseph K.: *See—*
Taylor, Norman J.; Mann, Joseph K.; and Atwood, Allen W., 3,686,501.

Manner, Warren R.; and Kinderman, Richard J., to Minnesota Mining and Manufacturing Company. Method of making coiled filament matt. 3,686,049, Cl. 156-167.000.

Manning, Robert E.: *See—*
Houlihan, William J.; and Manning, Robert E., 3,686,173.
Houlihan, William J.; and Manning, Robert E., 3,686,207.

Manning, Robert E., to Sandoz-Wander, Inc. N-(dichloro-α-hydroxybenzyl)-N'-amidinohydrazines and the salts thereof. 3,686,309, Cl. 260-564.00f.

Manning, William O., to Holley Carburetor Company. Automatic choke. 3,685,809, Cl. 261-39.00b.

Manokhin, Anatoly Ivanovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, AnatolyIvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Mansell, Gilbert G. Fishing boat. 3,685,481, Cl. 115-35.000.

Mansen, Robert L.: *See—*
Price, Albert E.; and Mansen, Robert L., 3,685,458.

Maranghi, Enzo: *See—*
Giachetti, Alfredo; Maranghi, Enzo; and Piericci, Angiolo, 3,685,317.

Marasco, Paul M.: *See—*
Goldberg, Ira I.; Marasco, Paul M.; and Pfleger, Kenneth R., 3,686,478.

Maravetz Lester L., to Esso Research and Engineering Company. Herbicidal N-tetrahydrofurfuryl substituted 2,6-dinitroanilines. 3,686,230, Cl. 260-347.700.

Marchand, Jacques J. Apparatus for supporting and cutting an extracted length of stock material at a stock material rack. 3,685,211, Cl. 51-98.000.

Marcote, Rolando V.: *See—*
Chemtob, Elie M.; and Marcote, Rolando V., 3,685,652.

Marcovitch, Jacob, to Rotary Profile Anstalt. Apparatus for rolling and forming articles. 3,685,331, Cl. 72-190.000.

Marimes, Johannes Antonius, to U.S. Philips Corporation. Apparatus for detecting the orientation of the plane of polarisation of a plane-polarised beam of radiation. 3,685,883, Cl. 350-150.000.

Marker, Hannes: *See—*
Marker, Hannes; and Jungkind, Roland (said Jungkind assor. to said), 3,685,849.

Marker, Hannes; and Jungkind, Roland, said Jungkind assor. to said Marker, Hannes. Toe iron for safety ski bindings. 3,685,849, Cl. 280-11.35t.

Markham, Aaron E.; and Adolphson, Carl, to Georgia-Pacific Corporation. Drilling composition and method. 3,686,119, Cl. 252-8.50c.

Marks, Alfred F., to Esso Research and Engineering Company. Metal complexes of dithiobiurets. 3,686,244, Cl. 260-439.00r.

Marraffino, Leonard L. Three part, two fluid dispenser. 3,685,696, Cl. 222-136.000.

Marshall, George E.; Perno, Bartholomew J.; and Stokes, Robert G., to Xerox Corporation. Combined document feed and book copying apparatus. 3,685,905, Cl. 355-75.000.

Marshall, Robert G.; and Hedrick, Robert K. Suspension bridge preassembled abutment towers and anchorage. 3,685,074, Cl. 14-27.000.

Martin, Daniel W.; and Stein, John L. Electropiano. 3,685,384, Cl. 83-211.000.

Martin, Dennis: *See—*
Fletcher, John Vincent; and Martin, Dennis, 3,686,289.

Martin, William A. Self closing toothpaste tube. 3,685,700, Cl. 222-213.000.

Marx, Norbert M.; and Lichtenwalter, Carl G., to Chuin Gear, Incorporated. Method and apparatus for blitting belt. 3,685,756, Cl. 242-562.000.

Maschinenbau-Aktiengesellschaft Balcke: *See—*
Spangemacher, Kurt, 3,685,579.

Maschinenfabrik Fahr Aktiengesellschaft: *See—*
Bruer, Dirk; Schaible, Siegried; Wagenblast, Ernst; and Hohlwegler, Heinz, 3,685,674.

Mason, Michael E.: *See—*
Pittet, Alan O.; Mason, Michael E.; Theimer, Ernst T.; and Tibbetts, Merrick S., 3,686,177.

Mason, Ronald F., to Shell Oil Company. Alpha-olefin production. 3,686,351, Cl. 260-683.15d.

Massa Division Dynamics Corporation of America: *See—*
Massa, Frank, 3,685,487.

Massa, Frank, to Massa Division Dynamics Corporation of America. Coating trough with some energy activating means. 3,685,487, Cl. 118-72.000.

Massoubre, Jean-Marie, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Sulfur-vulcanizable polyurethanes having multiple terminal allyl groups. 3,686,147, Cl. 260-75.0np.

Massover, Hyman A., deceased; and Shapiro, David I. Showcase alarm system. 3,686,660, Cl. 340-274.000.

Masuda, Toru: *See—*
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, 3,686,167.

Masunaga, Kunihiko; and Shinohara, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method of forming a film by electrolytic polymerization. 3,686,079, Cl. 204-14.00n.

Matas, Gabalda Carlos, to Etablissements Pain-Bourgeas. Double twist spindle device. 3,685,269, Cl. 57-58.830.

Matevosian, Elene Pavlovna: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, AnatolyIvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Matsuhita, Takeshi; and Yagi, Hajime, to Sony Corporation. Semiconductor circuits. 3,686,684, Cl. 317-235.00r.

Matsui, Nobuya: *See—*
Kawada Tsukasa; Suzuki, Susumu; and Matsui, Nobuya, 3,686,240.

Matsui, Yuji: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.

Matsumaga, Kenji; Horiuchi, Michio; and Suzuki, Takao, to Dai Nippon Insatu Kabushiki Kaisha. Camera apparatus for taking stereographic photographs. 3,685,413, Cl. 95-18.00p.

Matsumoto, Seiji: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.

Matsuoka, Toshiyuki: *See—*
Nagase, Minoru; and Matsuoka, Toshiyuki, 3,685,868.

Matsushita Electric Industrial Co., Ltd.: *See—*
Deguchi, Masahiro; and Yano, Osahiko, 3,686,432.
Kosaka, Asahiro, 3,685,171.

Matsushita Electronics Corporation: *See—*
Shoji, Masami, 3,686,545.

Matthey, Emile Charles. Drive unit for a music box. 3,685,382, Cl. 84-95.000.

Maule Industries, Inc.: *See—*
Hilson, Eugene R., 3,685,783.

Maute, Robert L., to Monsanto Company. Removal of oxazole by metal complex formation. 3,686,263, Cl. 260-465.300.

Maximov, Mikhail Mikhailovich: *See—*
Geshelin, Boris Mikhailovich; Maximov, Mikhail Mikhailovich; Rozenberg, Maxim Davidovich; and Yakovleva, Nadezhda Evgenievna, 3,686,491.

Maxon Corporation: *See—*
Crowe, Harold W., 3,685,790.

Mayer, Gerald C. Automatic batch weigher. 3,685,602, Cl. 177-70.

Mayer, Oscar, & Company, Inc.: *See—*
Seiferth, Oscar E.; Austin, Glenn M.; and Gifford, Maurice J., 3,685,717.

Maytag Company, The: *See—*
Cotton, Curran D., 3,685,626.

Mc Nulty, John G.: *See—*
Hay, Russell G.; Mc Nulty, John G.; and Walsh, William L., 3,686,274.

McAndrew, Francis B.: *See—*
Heinz, Walter E.; and McAndrew, Francis B., 3,686,142.

McBride, Albert James: *See—*
McDonald, Dean Barry; and McBride, Albert James, 3,685,405.

McBride, John A. Soy bean processing machine. 3,685,429, Cl. 99-235.00r.

McBride, John A. Soy bean processing machine. 3,685,430, Cl. 99-235.00r.

McCardell, Willard B., Jr.; Bissland, John D.; and Witek, Roman J., Jr, to Essex International, Inc. Electrical connector construction. 3,686,619, Cl. 339-59.00m.

McClain, Keith D.: *See—*
Kelly, Edward T.; and McClain, Keith D., 3,685,428.

McClellan, Bingham A., to McClellan Industries, Inc. Simulated pork rind fishing lure. 3,685,197, Cl. 43-42.240.

McClellan, Herbert L.; Dom, Harry A.; and Wisebaker, Robert E., to National Machinery Company, The. Forging machine transfer. 3,685,070, Cl. 10-12.00t.

McClellan Industries, Inc.: *See—*

McClellan, Bingham A., 3,685,197.
McConnell, Edwin J., to Redington Counters, Inc. Counter with thin flexible barrier. 3,686,481, Cl. 235-92.00c.
McCulloch Corporation: *See—*
Dooley, James L., 3,685,287.
McCurdy, Richard H.; and Connelly, Lawrence W., to Sitelines, Inc. Hermetically sealed double-glazed window unit and method for sealing same. 3,685,239, Cl. 52-172.000.
McDonald, Dean Barry; and McBride, Albert James, to Cheney Extrusions (Australia) Limited. Extrusion moulding. 3,685,405, Cl. 94-46.00r.
McEver, Robert M., Jr.: *See—*
Gulick, Ronald A.; and McEver, Robert M., Jr., 3,685,621.
McGrath, Donald W.: *See—*
Early, James R.; Eyring, William M.; McGrath, Donald W.; and Takenaka, Toshio, 3,685,139.
McGraw-Edison Company: *See—*
Wandler, Donald, 3,685,858.
McIlvaine, Robert L.; and Kent, Roger E., to Environeering, Inc. Wet scrubber for contaminated gas. 3,685,261, Cl. 55-240.000.
McJones, Robert. Storage for compressors blowdown. 3,685,925, Cl. 417-302.000.
McMullan, Samuel J.; and Williams, Albert J., Jr., to Leeds & Northrup Company. Null-balance servo system. 3,686,568, Cl. 324-99.00r.
McMurtry, Randolph J.: *See—*
Kohn, Gustave K.; and McMurtry, Randolph J., 3,686,398.
McNulty, John G.: *See—*
Hay, Russell G.; McNulty, John G.; and Walsh, William L., 3,686,275.
McVoy, David S., to Coaxial Scientific Corporation. Non-duplication switching arrangement for cable television transmission. 3,686,573, Cl. 325-395.000.
Meacham, George B. K.; and Oliver, James L. Emission control device. 3,685,499, Cl. 123-90.150.
Medi-Plas Sciences, Inc.: *See—*
Rosa, Daniel F., 3,685,426.
Medley, Richard C., to Crouse-Hinds Company. Tensioned reflector sheet with press forms. 3,686,495, Cl. 240-41.35e.
Mees, Omer Jan: *See—*
Stievenart, Emile Frans; Mees, Omer Jan; and Verelst, Johan Lodewijk, 3,685,420.
Mehnert, Klaus, to Wilhelm Bofringer Mobelwerkstallen. Table. 3,685,466, Cl. 108-156.000.
Mehrhof, Werner: *See—*
Unger, Richard; Seitz, Georg; Klockow, Michael; and Mehrhof, Werner, 3,686,164.
Mehrmann, Ludwig: *See—*
Vorderbruegge, Hermann; and Mehrmann, Ludwig, 3,685,324.
Meier-Windhorst, Christian August, to Artos Dr. Ing. Meier-Windhorst Kommanditgesellschaft. Continuous process for the treatment of moving fabric webs of material, 3,685,954, Cl. 8-151.000.
Meinken, Bernard: *See—*
Schwing, Friedrich; and Meinken, Bernard, 3,685,543.
Melamed, Nathan T.: *See—*
Roland, George W.; Hopkins, Richard H.; and Melamed, Nathan T., 3,686,586.
Menikheim, Virginia C.; and Kilmer, Charlie C. Surface treatment of nylon shaped articles with aqueous reducing agents. 3,686,017, Cl. 117-47.00a.
Merck & Co., Inc.: *See—*
Fisher, Michael H.; Hoff, Dale R.; and Bochis, Richard J., 3,686,110.
Woodruff, Harold Boyd; and Stoudt, Thomas H., 3,686,393.
Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Unger, Richard; Seitz, Georg; Klockow, Michael; and Mehrhof, Werner, 3,686,164.
Merger, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of acrylic ureides. 3,686,304, Cl. 260-553.00e.
Merker, Joachim: *See—*
Fischer, David; Kohler, Rudolf; Roos, Hugo; and Merker, Joachim, 3,685,845.
Merryweather, Gerald. Combined rod and reel. 3,685,195, Cl. 43-18.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Butter, Karl; Wittich, Willibald; and Theiss, Armin, 3,686,081.
Messerschmitt-Bolkow-Blohm, GmbH: *See—*
Bachorr, Oskar, 3,685,610.
Held, Manfred, 3,685,452.
Metal Innovations, Inc.: *See—*
Ayers, Maurice Donald, 3,686,376.
Meth, Harry: *See—*
Getgey, William F.; and Meth, Harry, 3,685,828.
Meth, Harry; and Greenberg, Allen A., to Rainbow Crafts, Inc. Toy extruder. 3,685,936, Cl. 425-195.000.
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, to Farbenfabriken Bayer Aktiengesellschaft. 1,2,4-Thiadiazolyl-ureas. 3,686,198, Cl. 260-306.80d.
Metzger, Carl P. Fishing lure. 3,685,191, Cl. 43-42.050.
Metzger, Karl Georg: *See—*
Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,686,401.
Meudon, Jean: *See—*
Emile, Billy; and Meudon, Jean, 3,685,683.
Meulemans, Charles Cornelis Eduard; and Van Der Tas, Johannes Cornelis, to U.S. Philips Corporation. Photoflash lamp. 3,685,947, Cl. 431-95.000.
Meyer, Fred G. Apparatus for laying sprinkler pipe. 3,685,670, Cl. 214-1.0pa.
Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, to Glanzstoff AG. Catalytic production of dimethyl sulfide. 3,686,328, Cl. 260-609.00a.
Meyer Manufacturing, Inc.: *See—*
Meyer, Roy E., 3,686,498.
Meyer, Ronel M.; and Bartley, Erle E., to Kansas State University Research Foundation. Method and preparation for controlling feedlot bloat in ruminants. 3,686,416, Cl. 424-329.000.
Meyer, Roy E., to Meyer Manufacturing, Inc. Remote fixture lowering device. 3,686,498, Cl. 240-84.000.
Michaels, Sid, to Strauss, Levi, & Co. Garment spreading apparatus. 3,685,179, Cl. 38-21.000.
Middour, Donald R.: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,685,250.
Mifirma S-A.: *See—*
Fresard, Marcel, 3,685,473.
Mikkola, John E., to General Motors Corporation. Control circuit for a liquid vaporizing tool. 3,686,475, Cl. 219-272.000.
Mildenberger, Hilmar: *See—*
Scherer, Otto; and Mildenberger, Hilmar, 3,686,200.
Milgo Corporation: *See—*
Stegenga, Jerry A., 3,686,681.
Milicevic, Branimir; and Litzler, Alfred, to Ciba-Geigy AG. Synthetic fiber dyeing with hexamethyl phosphoric acid triamide and chlorinated ethylene solution of disperse dye. 3,685,955, Cl. 8-163.000.
Militello, James V., to American Allsafe Company, Inc. Sweatband-harness assembly. 3,685,055, Cl. 2-181.400.
Millar, John J., to Scott & Williams, Inc. Circular knitting machine. 3,685,321, Cl. 66-95.000.
Miller, Earl A.: *See—*
Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, 3,686,023.
Miller, Gordon H.: *See—*
Van Stavern, Merle H.; Moorer, Henry D.; Miller, Gordon H.; and Gunn, Kenneth M., 3,685,653.
Miller, Gordon R., to Dow Chemical Company, The. Process for continuously producing at high speeds a foam polyurethane resin laminate. 3,686,047, Cl. 156-79.000.
Miller, Hobson, to United States Banknote Corporation. Solvent absorbent method and product application. 3,686,125, Cl. 252-90.000.
Miller, Phillip; and Montgomery, Carroll Sherman, to American Cyanamid Company. Nitroimidazoles. 3,686,203, Cl. 260-309.000.
Miller, Robert C.: *See—*
Grasselli, Robert K.; and Miller, Robert C., 3,686,295.
Mallick, George T., Jr.; Carr, Walter J., Jr; and Miller, Robert C., 3,686,564.
Miller, Robert E., to Monsanto Company. Protein cross-linked with polymerized unsaturated carboxylic acid. 3,685,998, Cl. 99-2.00r.
Miller, Robert L., to Honeywell Inc. Voltage ratio circuit. 3,686,513, Cl. 307-229.000.
Miller, Ronald R.: *See—*
Hahn, Frederick C.; and Miller, Ronald R., 3,685,177.
Miller, Theodore C., to Sterling Drug, Inc. D-Homoestratrienes. 3,686,223, Cl. 260-340.500.
Milleville, Bertram J.: *See—*
Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, 3,685,536.
Millington, Raymond J.; and Rezek, John R., to Motorola, Inc. Integrated circuit decoder responsive to two sequential tones, with group call provisions. 3,686,635, Cl. 340-171.00r.
Mills, William R., Jr.: *See—*
Givens, Wyatt W.; Caldwell, Richard L.; and Mills, William R., Jr., 3,686,503.
Minami, Shoichitro: *See—*
Ito, Yoshio; Smiyama, Shinichi; Toyoda, Akinobu; and Minami, Shoichitro, 3,686,294.
Mindt, Lothar: *See—*
Van Dorp, David Adriaan; Akroyd, Philip; and Mindt, Lothar, 3,686,003.
Minnesota Mining and Manufacturing Company: *See—*
Benigno, Paolo; and Primicerio, Fernando, 3,685,642.
Bradshaw, Thomas I., 3,685,199.
Good, Paul J., 3,685,414.
Loucks, Millard U., 3,686,129.
Manner, Warren R.; and Kinderman, Richard J., 3,686,049.
Moore, George G. I.; Harrington, Joseph Kenneth; and Gerster, John F., 3,686,192.
Mukherjee, Joan M. W., 3,685,993.
O'Mara, Edward A., 3,685,908.
Paciorek, Walter J.; and Norton, Randolph, 3,685,734.
Reeds, John W., Jr., 3,685,899.
Mitchell Industries, Inc.: *See—*
Younkin, James R., 3,686,555.
Mitchell, Paul J., Jr., to SW Industries, Inc. Process for squeezing water from paper sheet. 3,685,436, Cl. 100-37.000.
Mitchener, Gary R., to MacGregor Lead Company. Stabilizer for halogen-containing resins. 3,686,135, Cl. 252-400.000.
Mitsubishi Electric Corporation: *See—*

Nomaguchi, Tamotsu; Tabata, Norikazu; and Ito, Toshio, 3,685,950.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Otsuka, Eiji; Kanai, Kazumichi; and Inoue, Shigeru, 3,686,305.
Miyazaki, Toshio, to Nissan Motor Company Limited. Automatic transmission. 3,685,372, Cl. 74-863.000.
Miyazuka, Hajime: *See*—
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Mizuno, Katsumi: *See*—
Kaneko, Tamaki; and Mizuno, Katsumi, 3,685,444.
Mobil Oil Corporation: *See*—
Givens, Wyatt W.; Caldwell, Richard L.; and Mills, William R., Jr., 3,686,503.
Rohn, Charles L., 3,686,385.
Wuertz, John H., 3,685,124.
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., to United States of America, Agriculture. N-cyclohexyl-N-(2-cyanoethyl)oleamide as a plasticizer. 3,686,242, Cl. 260-404.500.
Modicon Corporation: *See*—
Fletcher, William E.; and Rosseay, Leon B., 3,686,639.
Mohn, Donald R.; and Mohn, Herbert D. Harvesting machine. 3,685,266, Cl. 56-330.000.
Mohn, Herbert D.: *See*—
Mohn, Donald R.; and Mohn, Herbert D., 3,685,266.
Moir, Kenneth Wilfred. Apparatus for the analysis of fibrous constituents in feeds. 3,685,970, Cl. 23-253.00r.
Molex Products Company: *See*—
Krehbiel, John H., Sr.; and Krafthefer, Kerry M., 3,686,625.
Molins Machine Company, Limited: *See*—
Harris, Richard William, 3,685,631.
Labbe, Francis A. M., 3,685,523.
Mollaretti, Virginia: *See*—
Casini, Paola; and Mollaretti, Virginia, 3,686,011.
Molloy, Everett W., to Yellow Springs Instrument Company, Inc., The. Direct reading quantitative gas measuring device. 3,685,346, Cl. 73-23.000.
Mono-Sport GmbH: *See*—
Schmid, Hans, 3,685,846.
Monsanto Company: *See*—
Carroll, Robert L., 3,686,290.
Cavender, James V., Jr., 3,686,160.
Coran, Aubert Yaucher; and Kerwood, Joseph Edward, 3,686,169.
Hollrah, Glennon H., 3,686,413.
Kidwell, Roger L., 3,686,282.
Layman, Lee R., 3,685,671.
Maute, Robert L., 3,686,263.
Miller, Robert E., 3,685,998.
Morita, Eiichi, 3,686,214.
Taylor, Keith M., 3,686,267.
Young, Raymond H., Jr., 3,685,990.
Montecatini Edison S.p.A.: *See*—
Albanese, Pietro; Benzoni, Luigi; Corain, Benedetto; and Turco, Aldo, 3,686,264.
Carraro, Giorgio; Del Vesco, Adriano; and Olindo, Santino, 3,686,299.
Parrini, Paolo; Credali, Lino; and Chiolle, Antonio, 3,686,100.
Vecchio, Martino; and Stefani, Giancarlo, 3,686,338.
Montessori, Giuseppe: *See*—
Olcelli, Gian Battista; Caliari, Sergio; and Montessori, Giuseppe, 3,686,632.
Montgomery, Carroll Sherman: *See*—
Miller, Phillip; and Montgomery, Carroll Sherman, 3,686,203.
Montoya, Jose M. Genua: *See*—
Solomka, Monroe M.; and Montoya, Jose M. Genua, 3,686,010.
Moore, Earl Phillip, to Du Pont de Nemours, E. I., and Company. Perfluorodicyclopentadine. 3,686,336, Cl. 260-648.00f.
Moore, George G. I.; Harrington, Joseph Kenneth; and Gerster, John F., to Minnesota Mining and Manufacturing Company. Substituted pyridine derivatives. 3,686,192, Cl. 260-294.80f.
Moore, Stephen G.: *See*—
Herrell, Robert E.; and Moore, Stephen G., 3,685,253.
Moorer, Henry D.: *See*—
Van Stavern, Merle H.; Moorer, Henry D.; Miller, Gordon H.; and Gunn, Kenneth M., 3,685,653.
Morehouse, Edward L., to Union Carbide Corporation. Siloxane-polyoxyalkylene block copolymers. 3,686,254, Cl. 260-448.20b.
Morehouse Industries, Inc.: *See*—
Brown, Donald J., 3,685,749.
Morgan, Leslie, to Leslie, Morgan, Furniture Limited. Furniture. 3,685,063, Cl. 5-345.000.
Mori, Tadahiro: *See*—
Sakomura, Toshio; Shimizu, Akihiko; and Mori, Tadahiro, 3,686,261.
Morita, Eiichi, to Monsanto Company. Thiocarbamoyl pyrrolidinyl sulfides. 3,686,214, Cl. 260-326.830.
Morito, Tadashi: *See*—
Ozawa, Minoru; Morito, Tadashi; and Ishigami, Masahiro, 3,686,598.
Moriyama, Itsuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Iris diaphragm and blade therefor. 3,685,418, Cl. 95-64.00r.
Morrill, Charles W. Incinerator. 3,685,467, Cl. 110-8.00r.
Morris, Philip, Incorporated: *See*—
Risher, Frederick L., 3,685,150.
Morrison, David J. Modular construction for enclosed theaters. 3,685,220, Cl. 52-8.000.
Morrison, Howard J., to Glass, Marvin, & Associates. Ball carrier. 3,685,202, Cl. 46-40.000.
Morrison, Robert, to Speedcranes Limited. Derrick cranes and swinging derricks. 3,685,669, Cl. 212-58.000.
Morton, David Russell, to Procter & Gamble Company, The. Textile softening agents impregnated into absorbent materials. 3,686,025, Cl. 117-140.000.
Morton International, Inc.: *See*—
Heskftt, Don Edward; Hoover, Frank Kryder; Burkhalter, Robert, Jr.; and Anderson, Douglas West, 3,685,659.
Moser, Gene W.; Cox, Robert A.; and Teza, James E. Interaction symbol recorder for use in evaluating a dialogue. 3,686,429, Cl. 178-2.00r.
Motoren- und Turbinen-Union: *See*—
Leibach, Heinrich; Schweikl, Ludwig; and Lottes, Paul, 3,685,738.
Motorola, Inc.: *See*—
Bougut, Henry A., 3,686,530.
Millington, Raymond J.; and Rezek, John R., 3,686,635.
Spanjer, Keith Gordon, 3,685,784.
Mott, George E.; and Ziober, Johnnie J., to Texaco Inc. Marine platform with-curved support leg. 3,685,300, Cl. 61-465.000.
Mott, George E., to Texaco Inc. Subsea pipe laying apparatus and method. 3,685,306, Cl. 61-72.300.
Mouat, Margaret A. Fireplace hood heat saver. 3,685,506, Cl. 126-121.000.
Moulinage et Retroderie de Chovanor: *See*—
Neveux, Jacques, 3,685,273.
Moyer, Henry F.; and Revells, Robert G., to Libbey-Owens-Ford Company. Soldering apparatus. 3,685,714, Cl. 228-6.000.
MPB Corporation: *See*—
Gordon, Keith M., 3,685,342.
Mueller, Herbert; and Overwien, Hermann, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2-methylhept-1-en-6-one. 3,686,321, Cl. 260-593.00r.
Mueller, Johannes: *See*—
Bickel, Hans; Mueller, Johannes; and Bosshardt, Rolf, 3,686,172.
Mukherjee, Joan M. W., to Minnesota Mining and Manufacturing Company. Lithographic plate with resin binder containing silver soap oxidizing agent. 3,685,993, Cl. 96-33.000.
Muller, Arthur. Parenteral iron preparations. 3,686,397, Cl. 424-180.000.
Muller, Jacques. Automatic water draining device for fuel filter. 3,685,655, Cl. 210-114.000.
Munz, Ferdinand; Hack, Helmuth; and Eue, Ludwig, to Farbenfabriken Bayer Aktiengesellschaft. Cycloaliphatic imidozolidine-2-one-1-carboxylic acid amides. 3,686,204, Cl. 260-309.700.
Munzinger, Friedrich. Rotary piston engine. 3,685,928, Cl. 418-18.000.
Murdock Machine & Eng. Co.: *See*—
Young, John, III, 3,685,969.
Muresan, Gheorghe: *See*—
Szumilas, Wladislaw; Adam, Macedon Emil; Lata, Ilie; and Muresan, Gheorghe, 3,685,793.
Murphy, Clarence R.: *See*—
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,285.
Ahn, Yong Kee; Cupples, Barrett L.; and Murphy, Clarence R., 3,686,286.
Cupples, Barrett L.; Murphy, Clarence R.; and Walsh, William L., 3,686,076.
Murphy, G. W., Industries, Inc.: *See*—
Hollingshead, Frank A., 3,685,601.
Jacyno, Anthony, 3,685,843.
Murphy, Kevin P.: *See*—
Barton, Oliver A.; and Murphy, Kevin P., 3,686,130.
Murray, Edward J.; and Winstrom, Leon O., to Allied Chemical Corporation. Vapor phase conversion of cyclohexane carboxylic acid to cyclohexanone. 3,686,318, Cl. 260-586.00r.
Muselik, Miloslav, to Adamovske Strojirny, narodni podnik. Clamping apparatus for offset cylinders. 3,685,445, Cl. 101-415.100.
Nadelson, Jeffrey: *See*—
Houlihan, William J.; and Nadelson, Jeffrey, 3,686,186.
Nagamatsu, Katsumi: *See*—
Kutsuwada, Noboru; and Nagamatsu, Katsumi, 3,685,485.
Nagase, Minoru; and Matsuoka, Toshiyuki, to Nippon Air Brake Co., Ltd., The. Variable load brake control apparatus. 3,685,868, Cl. 303-22.00r.
Nakajima, Toshihiko; and Yumde, Yasufumi, to Hitachi, Ltd. Filter for image pickup in surface-sequential color television. 3,685,886, Cl. 350-315.000.
Nakamura, Masanobu. Bulging apparatus. 3,685,327, Cl. 72-58.000.
Nakamura, Yoshimi: *See*—
Yoshino, Takachika; Saito, Shigeru; Sasaki, Yutaka; and Nakamura, Yoshimi, 3,686,138.
Nakano, Sohta; Fujimoto, Kazumitsu; Otomo, Kazuhiro; Yokota, Toshiyuki; and Shindo, Hiroshi. Process for preparation of aggregated food products and composition therefor. 3,686,002, Cl. 99-107.000.
Nakase, Yoshiaki: *See*—

Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Nakazyo, Kiyoshi: *See—*
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,685,995.

Nankee, Robert J.; Lamphere, Jack C.; and Nelson, Rodney A., to Dow Chemical Company, The. Process of making a water-absorbent coated article and resultant product. 3,686,024, Cl. 117-140.00a.

Napoli, Louis Sebastian; and Hughes, John Joseph, to RCA Corporation. Coax line to strip line end launcher. 3,686,624, Cl. 339-177.00r.

Naruse, Yohsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, to Sony Corporation. Cathode ray tube having shadow mask apertures aligned along curved horizontal and vertical lines. 3,686,525, Cl. 313-92.00b.

Nashua Corporation: *See—*
Leclair, Albert W.; and Benbrook, Charles H., 3,685,996.

Nast, Roland: *See—*
Ley, Kurt; Eholser, Ulrich; Nast, Roland; Metzger, Karl Georg; and Fritsche, Dieter, 3,686,401.

National Cash Register Company, The: *See—*
Trimble, Cebern B., 3,685,144.
Zachar, James E.; and Srode, Walter E., Jr., 3,686,637.

National Machinery Company, The: *See—*
McClellan, Herbert L.; Dom, Harry A.; and Wisebaker, Robert E., 3,685,070.

National Research Development Corporation: *See—*
Bentall, Richard Hugh Cameron, 3,685,509.
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,686,553.
White, Martin; and Luff, Peter Purnell, 3,686,022.

National Union Electric Corporation: *See—*
Lagerstrom, Robert C., 3,685,089.

National-Standard Company: *See—*
Rawls, Vaughn, 3,686,391.

Natsume, Yoshimi: *See—*
Hobo, Nobuhito; Natsume, Yoshimi; and Kaga, Sumihiro, 3,685,526.

Nauman, Mark R.: *See—*
Powell, Mabrin P.; and Nauman, Mark R., 3,686,015.

Naylor, John J., to Synergistc Systems, Inc. Light display apparatus. 3,686,494, Cl. 240-10.100.

Nazarov, Nikolai Grigorievich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.

Neal, Arthur H.; and Parker, Paul T., to Esso Research and Engineering Company. Dimerization process. 3,686,352, Cl. 260-683.15d.

Nearhoof, George L.: *See—*
Kirby, Herbert D.; Nearhoof, George L.; and Glenn, Culler Jimmie, 3,685,900.

Nechtschein, Jacqueline: *See—*
Laleuf, Rene; and Nechtschein, Jacqueline, 3,686,094.

Nelson, Daniel E. Hot gas pumps and thrusters. 3,685,294, Cl. 60-266.000.

Nelson, Gerald V.: *See—*
Coons, William R., Jr.; Nelson, Gerald V.; and Wray, Glenn C., 3,686,095.

Nelson, Gunner E., to Ethyl Corporation. Process for producing sodium, lithium or potassium dihydrocarbon dihydrides of aluminum. 3,686,248, Cl. 260-448.00a.

Nelson, Lloyd A., to Gerber Products Company. Process for applying tape across the cover and body of a container. 3,686,052, Cl. 156-212.000.

Nelson, Rodney A.: *See—*
Nankee, Robert J.; Lamphere, Jack C.; and Nelson, Rodney A., 3,686,024.

Nelson, Terry N.: *See—*
Foslien, Floyd L.; and Nelson, Terry N., 3,685,681.

Nelsson, Nels, to United States Gypsum Company. Bracket standard and partition member retainer. 3,685,234, Cl. 52-36.000.

Nemoto, Kenji, to Seiko Seiki Kabushiki Kaisha. Multi-spindle automatic bar machine. 3,685,111, Cl. 29-27.000.

Nestel, Stephan C.: *See—*
Fisher, Richard L.; Nestel, Stephan C.; and Niemi, John C., 3,685,238.

Nesterova, Maria Petrovna: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.

Neti, Radhakrishna Murty: *See—*
Sawa, Kenneth B.; and Neti, Radhakrishna Murty, 3,686,091.

Neuman, Marcel L.; and Colomb, Louis F. Method and apparatus of mounting and securing a rectilinear element on a support member of a machine. 3,685,116, Cl. 29-200.00b.

Neuzil, Richard W., to Universal Oil Products Company. Aromatic hydrocarbon separation by adsorption. 3,686,342, Cl. 260-674.0sa.

Neveux, Jacques, to Moulinage et Retroderie de Chovanor. Method and apparatus for false twisting textile yarns and product obtained thereby. 3,685,273, Cl. 57-77.400.

Nevin, John J.; and Dumire, Leo G., to Phelps Dodge Copper Products Corporation. Method of making coaxial cable. 3,685,147, Cl. 29-624.000.

New Cosmos Electric Company, Limited: *See—*
Kasahara, Riichiro, 3,686,655.

Newell Mfg., Company: *See—*
Webster, Robert B., 3,685,781.

Newell, William George. Sealing means. 3,685,837, Cl. 277-1.000.

Ney, J. M., Company, The: *See—*
Dube, Milford J.; and Semrow, Robert A., 3,686,514.

Nicholas, Harold J.; and Knapp, Furn F., Jr. Class of liquid crystals. 3,686,235, Cl. 260-397.200.

Nichols, George Edwin, Jr., to Bird Machine Company. Solids-liquid separating centrifuge. 3,685,722, Cl. 233-23.00r.

Nielsen, Tage S., to Rite Antotronics Corporation. Capacitive pick-up means for an electrical tachometer. 3,686,569, Cl. 324-126.000.

Niemi, John C.: *See—*
Fisher, Richard L.; Nestel, Stephan C.; and Niemi, John C., 3,685,238.

Nii, Takehiko: *See—*
Naruse, Yohsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,686,525.

Nijman, John P., to Bunker-Ramo Corporation, The. Coaxial cable connector plug. 3,686,623, Cl. 339-177.00e.

Niman, George J., to Hallingters Co., The. Self-correcting AFC system. 3,686,574, Cl. 325-421.000.

Ninet, Leon: *See—*
Mancy, Denise; Ninet, Leon; and Preud'Homme, Jean, 3,686,396.

Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, to Hoffmann-La Roche, Inc. 5-Lower alkanoyl-2-glycylamino benzophenones. 3,686,308, Cl. 260-562.00n.

Nippon Air Brake Co., Ltd., The: *See—*
Nagase, Minoru; and Matsuoka, Toshiyuki, 3,685,868.

Nippondense Kabushiki Kaisha: *See—*
Kawai, Hisasi; and Amaki, Masami, 3,686,583.

Nippondenso Kabushiki Kaisha: *See—*
Hobo, Nobuhito; Natsume, Yoshimi; and Kaga, Sumihiro, 3,685,526.

Nishimura, Tatsumi; Okuda, Itsuki; and Kado, Masaru, to Kumiai Chemical Industry Co., Ltd. Process for preparing 2-pyridinol phosphates. 3,686,191, Cl. 260-294.80k.

Niskovskikh, Vitaly Maximovich; Dyshkant, Viktor Fedorovich; and Kuznetsov, Leonid Georgievich, to Uralsky Zavod tyazhelogo mashinostroenia imeni S. Cooling system for continuous casting mold. 3,685,571, Cl. 164-283.000.

Nissan Motor Company Limited: *See—*
Miyazaki, Toshio, 3,685,372.

Nitto Chemical Industry Co., Ltd.: *See—*
Yoshino, Takachika; Saito, Shigeru; Sasaki, Yutaka; and Nakamura, Yoshimi, 3,686,138.

Noland, Lyle J.: *See—*
Bateman, Charles Donald; and Noland, Lyle J., 3,686,626.

Noll, Evelyn. Electronically and manually animated talking doll. 3,685,200, Cl. 46-232.000.

Nomaguchi, Tamotsu; Tabata, Norikazu; and Ito, Toshio, to Mitsubishi Electric Corporation. Combustion apparatus for mixing fuel and air in divided portions. 3,685,950, Cl. 431-285.000.

Nomine, Gerard: *See—*
Amiard, Gaston; Nomine, Gerard; and Torelli, Vesperto, 3,686,241.

Nomura, Yasuaki: *See—*
Kawamura, Toshiki; Ohneda, Tohru; Nomura, Yasuaki; and Taguchi, Kikuo, 3,685,725.

Nooter Corporation: *See—*
Heilmann, Le Roy W., 3,685,508.

Norddeutsche Affinerie: *See—*
Kniprath, Elmar, 3,685,965.

Norfolk, Cyril Leslie, to Fry's (London) Limited. Manufacture of saw blades. 3,685,373, Cl. 76-112.000.

North American Philips Co., Inc.: *See—*
Duyfjes, Werner; and Maas, Willem, 3,686,419.

North, Howard C. Process and apparatus for forming tubular thermoplastic film. 3,685,576, Cl. 165-47.000.

Norton, Randolph: *See—*
Paciorek, Walter J.; and Norton, Randolph, 3,685,734.

Nosochenko, Oleg Vasilievich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, AnatolyIvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Nuechatel, Andre Matthey: *See—*
Vaud, Janos Kurucz; and Nuechatel, Andre Matthey, 3,685,935.

Numata, Kenichiro: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, 3,686,132.

Nutter, Benjamin P., to Schlumberger Technology Corporation. Mechanical jar having an adjustable tripping load. 3,685,598, Cl. 175-302.000.

Nyul, Paul, to RCA Corporation. Angled array semiconductor light sources. 3,686,543, Cl. 317-235.00n.

Oberdorfer, Paul E., Jr., to Sun Oil Company. Motor vehicle emission control system. 3,685,502, Cl. 123-119.00r.

Obergfell, Allen R., to Fastener Corporation. Fastener driving tool. 3,685,396, Cl. 91-356.000.

Oblander, Ruth, to Sew Fit Co. Fitting aid. 3,685,155, Cl. 33-11.000.

O'Brien, Jay Philip; and Rachlin, Albert Israel, to Hoffmann-La Roche, Inc. Anti-microbial phenyl 3-halopropargyl ethers. 3,686,331, Cl. 260-612.00d.

Occidental Petroleum Corporation: *See—*
Chemtob, Elie M.; and Marcote, Rolando V., 3,685,652.

Ocean Protein Corporation: *See—*
Day, John J.; and Hirschman, Paul S., 3,685,489.

Odaka, Takashi: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Odaka, Takashi; and Suda, Tetuo, 3,685,929.

Oetiker, Hans. Structural elements. 3,685,863, Cl. 287-65.000.

Offner, Franklin F. Light control system for automobiles. 3,686,506, Cl. 307-10.000.

Ogilvy, Harry Heggie; Tuck, Elizabeth Margaret; Dobbs, David John Miller; and Rosser, John Anthony, to British Railways Board. Cleaning of rails. 3,685,454, Cl. 104-1.00r.

O'Harra, Russell L. Decorative plant totem. 3,685,204, Cl. 47-47.000.

Ohfuji, Yoshio, to Kuraray Co., Ltd. Process for preparation of aromatic polybenzimidazoles. 3,686,149, Cl. 260-78.40n.

Ohfuka, Toshio; Sato, Hideo; and Uchida, Yasuo, to Asahi Kogyo Kabushiki Kaisha. Process for the manufacture of fibrous mixtures having superior antistatic characteristics. 3,686,019, Cl. 117-47.00r.

Ohneda, Tohru: *See—*
Kawamura, Toshiki; Ohneda, Tohru; Nomura, Yasuaki; and Taguchi, Kikuo, 3,685,725.

Oishi, Yasushi: *See—*
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,685,995.

Okamura, Seizo: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

O'Keeffe, Terence W., to Westinghouse Electric Corporation. Masked photocathode. 3,686,028, Cl. 117-212.000.

Okuda, Itsuki: *See—*
Nishimura, Tatsumi; Okuda, Itsuki; and Kado, Masaru, 3,686,191.

Olcelli, Gian Battista; Caliari, Sergio; and Montessori, Giuseppe, to Pirelli S.p.A. Tape programmer for operating machines of various types, in particular operational machines and test machines. 3,686,632, Cl. 340-147.000.

Olindo, Santino: *See—*
Carraro, Giorgio; Del Vesco, Adriano; and Olindo, Santino, 3,686,299.

Oliver, James L.: *See—*
Meacham, George B. K.; and Oliver, James L., 3,685,499.

Olt, Robert L., to Hercules Incorporated. Method of producing fine particle ammonium perchlorate. 3,685,163, Cl. 34-5.000.

Olympus Optical Co., Ltd.: *See—*
Harada, Kenichi, 3,685,884.

O'Mara, Edward A., to Minnesota Mining and Manufacturing Company. Copying machine. 3,685,908, Cl. 355-107.000.

Omura, Itiro; Kondo, Toshio; and Tamura, Hifumi, to Hitachi, Ltd. Ion micro-analyser. 3,686,499, Cl. 250-41.9me.

Ono, Hisatake; Watarai, Syu; and Osada, Chiaki. Process for the preparation of linear high molecular weight compounds. 3,686,153, Cl. 260-85.50r.

Ono, Isao: *See—*
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, 3,686,350.

Onoda, Yoshimitsu; and Tsuboi, Takashi, to Hitachi, Ltd. Motor system having thyristor commutator. 3,686,548, Cl. 318-138.000.

Opiela, Jerry J. Boiler protective device. 3,686,452, Cl. 200-84.00b.

Opitz, Wolfgang, to Knapsack Aktiengesellschaft. Process for the manufacture of monochloroacetyl chloride. 3,686,302, Cl. 260-544.00.

Opti-Holding AG: *See—*
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,685,474.

Opto/Graphics, Inc.: *See—*
Wright, Joseph E., Jr.; and Cohee, Donald R., 3,685,895.

Orgeret, Lucien, to Compagnie Generale d'Electricite. Circuit breaker having current transformer with incorporated optical link. 3,686,567, Cl. 324-96.000.

Orkin, Stanley S., to Kacarb Products Corporation, mesne. Bearing construction. 3,685,878, Cl. 308-238.000.

Oroslan, Andrew; Sello, Stephen B.; and Tesoro, Giuliana C., to Stevens, J. P., & Co., Inc. Thioalkanoate chemical intermediates. 3,686,258, Cl. 260-455.00r.

Orrtronics, Inc.: *See—*
Cousino, Ralph E., 3,685,754.

Ortel, Gerhard, to Kuper, Heinrich. Apparatus for positioning sheets. 3,686,057, Cl. 156-548.000.

Ortho Pharmaceutical Corporation: *See—*
Hirsch, Allen F., 3,686,237.

Osada, Chiaki: *See—*
Ono, Hisatake; Watarai, Syu; and Osada, Chiaki, 3,686,153.

Oscari, Romano, 15% to Breiner, A. W. Glazing system. 3,685,240, Cl. 52-235.000.

O'Shea, Francis X., to Uniroyal, Inc. 3,5-Dihydrocarbyl-4-hydroxyphenyl 3-hydrocarbyl-4-hydroxy-5-(dialkylamino methyl) benzyl sulfide antioxidants. 3,686,312, Cl. 260-570.900.

O'Shea, Francis X., to Uniroyal, Inc. 1,2-Bis[3-alkyl-4-hydroxy-5-(dialkylaminomethyl phenylthio] ethanes. 3,686,313, Cl. 260-570.900.

O'Sickey, Lawrence B., to Parker-Hannifin Corporation. Fuel injection nozzle. 3,685,741, Cl. 239-406.000.

Oswald, Alexis; Hall, Daniel N.; and Griesbalm, Karl, to Esso Research and Engineering Company. Allylic sulfide reaction products. 3,686,326, Cl. 260-609.00r.

Otomo, Kazuhiro: *See—*
Nakano, Sohta; Fujimoto, Kazumitsu; Otomo, Kazuhiro; Yokota, Toshiyuki; and Shindo, Hiroshi, 3,686,002.

Otsuka, Eiji; Kanai, Kazumichi; and Inoue, Shigeru, to Mitsui Toatsu Chemicals, Incorporated. Method for synthesizing urea. 3,686,305, Cl. 260-555.00a.

Otten, Joachim; and Schaeffer, Georg, to Farbwerke Hoechst Aktiengesellschaft. Process for the preparation of p-tolnuenesulfochloride. 3,686,300, Cl. 260-543.00r.

Otto, Charles W., to General Electric Company. Resilient mounting arrangement for rotating machines and method of producing same. 3,685,773, Cl. 248-26.000.

Overwien, Hermann: *See—*
Mueller, Herbert; and Overwien, Hermann, 3,686,321.

Owens-Corning Fiberglas Corporation: *See—*
Hansen, James H.; Leedy, Nelson J.; and Slonaker, Robert O., 3,685,978.

Owens-Illinois, Inc.: *See—*
Belcher, Samuel L., 3,685,461.
Hall, Maclin S., 3,686,686.
Heffran, Vernon C., 3,685,679.
Uhlig, Albert R., 3,685,941.

Oxford Industries, Inc.: *See—*
Frost, Wade W., 3,685,245.

Oy Nokia AB: *See—*
Hyrylainen, Kauko Kalervo, 3,686,614.

Ozawa, Minoru; Morito, Tadashi; and Ishigami, Masahiro, to Hitachi, Ltd. Current transformer. 3,686,598, Cl. 336-58.000.

P & L Sales Incorporated: *See—*
Simmons, Patricia L., 3,685,524.

P & Z Company, Inc.: *See—*
Heacox, Russel L., 3,685,301.

Pacific Car and Foundry Company: *See—*
Jensen, James R., 3,685,870.

Pacific Grinding Wheel Company, Inc.: *See—*
Bates, Fred R., 3,685,215.

Paciorek, Walter J.; and Norton, Randolph, to Minnesota Mining and Manufacturing Company. Controlled fragrance release device. 3,685,734, Cl. 239-56.000.

Packagine Specialties, Inc.: *See—*
Francis, William J., 3,685,463.

Packagir.g Corporation of America: *See—*
Diehl, Philip A., 3,685,649.

Pactide Corporation: *See—*
Rodgers, Franklin A., 3,685,259.

Paddock, Paul F. Device to pack articles in boxes. 3,685,624, Cl. 193-7.000.

Paige, Dennis D.; and Coleman, Lewis E., to Automated Lawn Builders of the Midwest, Inc. Lawn and turf maintenance unit. 3,685,468, Cl. 111-11.000.

Paillard S.A.: *See—*
Sekera, Jaroslav, 3,685,890.

Pala, Gianfranco, to Instituto de Angeli S.p.A. 3-Halogenated 4,4'-disulfoxy-diphenyl-(2-pyridyl)-methane. 3,686,189, Cl. 260-294.80r.

Pale Corporation: *See—*
Sandelman, Morris D., 3,685,106.

Palmenberg, Edward C., to Chromalloy American Corporation. Contour-abrasion means and method. 3,685,219, Cl. 51-328.000.

Palmer, Robert A., to Korblock Corporation. Encased steel building block. 3,685,244, Cl. 52-592.000.

Pannier, Karl A., Jr.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,685,517.

Panning, Artin R., to Blower Application Company. Combined shredding, compacting and incinerating apparatus. 3,685,437, Cl. 100-45.000.

Pappo, Raphael; and Prekel, Patricia A., to Searle, G. D., & Co. 17-Oxygenated-2-oxaestra-1(10), 4-dien-3-ones and compounds corresponding. 3,686,226, Cl. 260-343.20s.

Papritz, Hans, to Haag Streif AG. Device for compensation of a force of constant value and direction. 3,685,779, Cl. 248-399.000.

Park, Im K.: *See—*
Winkler, Frnel R.; and Park, Im K., 3,686,069.

Park-Ohio Industries Inc.: *See—*
Lewis, John C., 3,686,459.

Parker, Louis W. Muter for solid state television receivers. 3,686,430, Cl. 178-5.80a.

Parker, Paul T.: *See—*
Neal, Arthur H.; and Parker, Paul T., 3,686,352.

Parker-Hannifin Corporation: *See—*
Gooding, Harley L., Jr., 3,685,397.
O'Sickey, Lawrence B., 3,685,741.

Parrini, Paolo; Credali, Lino; and Chiolle, Antonio, to Consiglio Nazionale Delle Ricerche and Montecatini Edison S.p.A. Anion-exchange resins and process for preparation thereof. 3,686,100, Cl. 260-2.10e.

Parshin, Alexei Nikolaevich, to Vsesojuzny Nauchno-Issledovatelsky Institut Tegkogo i Textilnogo Mashinostroenija. Selvage forming device for looms. 3,685,551, Cl. 139-122.00s.

Pascale, John V.: *See—*
Brodnitz, Michael H.; Pascale, John V.; and Vock, Manfred H., 3,686,323.
Brodnitz, Michael H.; and Pascale, John V., 3,686,324.

Pascoe, Larry B.: *See—*
Frankie, Thomas T.; and Pascoe, Larry B., 3,685,716.

Pass, Roger D. Cream and lather applicator. 3,685,913, Cl. 401-190.000.

Passal, Frank, to M & T Chemicals Inc. Process for the preparation of sulfohydrocarbon-di-yl neocarboxylates. 3,686,239, Cl. 260-400.000.

Patena, Michael D.: *See—*
Decker, Robert M.; Patena, Michael D.; and White, Thomas G., 3,686,531.

Patenaude, Wilfrid J. Connector for structural steel. 3,685,866, Cl. 287-189.36r.

Patrick, Ralph E.; Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil & Refining Company. Hydrodealkylation process. 3,686,340, Cl. 260-672.00r.

Patt, Sylvester. Boring and facing head. 3,685,917, Cl. 408-150.000.

Patterson, Robert W., to United States Steel Corporation. Apparatus for removing excess coating material from strip. 3,685,484, Cl. 118-63.000.

Patterson-Kelley Co., Inc., The: *See—*
Fischer, John J.; and Sibley, John W., 3,685,805.

Pauley, Eugene E. Building panel and assembly. 3,685,228, Cl. 52-506.000.

Paulson, Harold E. Printing press feeder. 3,685,821, Cl. 271-29.000.

Pauly, Walter W., to Stanton Magnetics, Inc. Speaker protective circuit. 3,686,511, Cl. 307-202.000.

Payne, Stanley D.; Hill, Donald E.; and Walker, Robert G., to Industra Products, Inc. Wire coil stripper and inserting device. 3,685,118, Cl. 29-205.00r.

Pearce, Godfrey R.; and Breeden, William J., to Mallory, P. R., & Co., Inc. Capacitor having a sealing means engaging the terminals. 3,686,536, Cl. 317-230.000.

Pearson, George H., to Slumberland Group Limited. Spring interiors for mattresses, seats and the like. 3,685,062, Cl. 5-269.000.

Peck, Merrill V.; Thompson, Edwin P.; Thompson, William F.; and Peck, Robert M., to Frank Edge Saw Manufacturing Company. Machine for cutting contour. 3,685,377, Cl. 83-201.000.

Peck, Robert M.: *See—*
Peck, Merrill V.; Thompson, Edwin P.; Thompson, William F.; and Peck, Robert M., 3,685,377.

Pedersen, Charles John, to Du Pont de Nemours, E. I., and Company. Complexes of polyether compounds and ionic compounds. 3,686,225, Cl. 260-340.300.

Peetermans, Julien: *See—*
Huygelen, Constant; and Peetermans, Julien, 3,686,394.

Pemberton, Paul E.; and Luby, John J. Sectional fire door assembly. 3,685,567, Cl. 160-8.000.

Penco, Sergio: *See—*
Arcamone, Federico; Cassinelli, Giuseppe; Penco, Sergio; and Tognoli, Luigi, 3,686,163.

Pennwalt Corporation: *See—*
Groepper, Jurgen; and Sanchez, Jose, 3,686,102.

Pepper, Hurley D.: *See—*
Farman, Charles E.; Green, Thomas C.; Pepper, Hurley D.; and Slone, Samuel, 3,686,115.

Perga, Martin W.: *See—*
DePalma, Ted V.; Brons, Albert J.; and Perga, Martin W., 3,685,972.

Perlman, Berry Stuart: *See—*
Upadhyayula, Chainulu Lakshminarasimha; and Perlman, Berry Stuart, 3,686,578.

Perno, Bartholomew J.: *See—*
Marshall, George E.; Perno, Bartholomew J.; and Stokes, Robert G., 3,685,905.

Peroni, George J., to Seatech Corporation. Personal underwater vehicle. 3,685,480, Cl. 115-6.100.

Perrin, Louis R.F.J. Soldering apparatus. 3,685,715, Cl. 228-37.000.

Peschcke-Koedt, Andreas D. Adjustable shower apparatus. 3,685,745, Cl. 239-587.000.

Peter, Heinrich: *See—*
Habermeier, Juergen; Batzer Hans; Porret, Daniel; Peter, Heinrich; and Fechtig, Bruno, 3,686,174.

Peters, Charles L., to Box Innards, Inc. Machine for creating divider structures such as are used as internal partitions within a box. 3,685,401, Cl. 93-37.00r.

Peters, Edward M., to Radiation Research Corporation. Shaped articles from nylon-4. 3,686,066, Cl. 161-150.000.

Petersen, Jorgen Hartvig; and Madsen, Ingvard Mosby, to Danfoss A/S. Liquid pump, particularly a fuel-oil pump. 3,685,927, Cl. 418-15.000.

Petersen, Walter A., to International Nickel Company, Inc., The. Welding electrode for joining copper-nickel alloys. 3,686,027, Cl. 117-205.000.

Peterson, Robert S., to Westinghouse Electric Corporation. Synchronous motor field regulator control. 3,686,551, Cl. 318-174.000.

Peterson, Robert S., to Westinghouse Electric Corporation. Synchronous motor field regulator control. 3,686,552, Cl. 318-174.000.

Petrequin, Pierre: *See—*
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weisz, Michel, 3,685,988.

Petro-Tex Corporaton: *See—*
Dean, Johnny C.; and Colling, Philip M., 3,686,347.

Petrol Injection Limited: *See—*
Jackson, Harold Ernest, 3,685,503.
Jackson, Harold Ernest, 3,685,742.

Petrov, Vladimir Konstantinovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Petrusek, Victor. Receptacle having a cylindrical target opening in the cover portion and tethered ball. 3,685,827, Cl. 273-98.000.

Pettinato, Gioseppe. Ultrasonic probe. 3,685,350, Cl. 73-71.500.

Petzny, Wilfried J.: *See—*
Kiovsky, Thomas E.; and Petzny, Wilfried J., 3,685,962.

Pfeiffer, Heinrich, to Dieffenbachen, J., Maschinenfabrik, GmbH. Heating platen press. 3,685,932, Cl. 425-109.000.

Pfenning, Dwight B.; and Brown, Robert L., to E-C Corporation. Method and apparatus for recovering water from a hydrocarbon slurry. 3,686,090, Cl. 204-186.000.

Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,686,222.

Pfister, Alain: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.

Pfisterer, Heinz A.: *See—*
Robinson, Keith J.; and Pfisterer, Heinz A., 3,686,364.

Pfizer Inc.: *See—*
Canas-Rodriquez, Antonio; and Leeming, Peter R., 3,686,182.
Gadsby, Brian; Leeming, Peter Rodway; and Thomas, Michael Barrie, 3,686,291.
Timreck, Albert E., 3,686,168.

Pfleger, Kenneth R.: *See—*
Goldberg, Ira I.; Marasco, Paul M.; and Pfleger, Kenneth R., 3,686,478.

Pfrommer, Fritz; and Bansal, Suresh A., to Cross Company, The. Transfer device. 3,685,630, Cl. 198-19.000.

Phares, Lindsey J., to Raymond International, Inc. Permafrost Insulation. 3,685,583, Cl. 166-302.000.

Phelps Dodge Copper Products Corporation: *See—*
Nevin, John J.; and Dumire, Leo G., 3,685,147.

Phelps, Ross Leslie: *See—*
Snodgrass, Kenneth William; Steele, William Henry; Wilson, Alan; and Phelps, Ross Leslie, 3,685,613.

Phillips, F. C., Inc.: *See—*
Granger, Edward H., Jr., 3,685,175.

Phillips, James A., to Standard Oil Company, (Indiana). Plastic-metal can. 3,685,685, Cl. 220-67.000.

Phillips Petroleum Company: *See—*
Dunn, Howard E., 3,686,353.
Fahey, Darryl R., 3,686,245.
Gilbert, Dixie E., 3,686,379.
Pitzer, Emory W., 3,686,346.
Ruehlen, Forrest N., 3,686,082.

Physio-Control Corporation: *See—*
Kawaguchi, Harold H., 3,685,645.

Piazza, Aldo. Crampon. 3,685,173, Cl. 36-7.600.

Pierce, John H.: *See—*
King, Charles S. W.; and Pierce, John H., 3,685,755.

Piericci, Angiolo: *See—*
Giachetti, Alfredo; Maranghi, Enzo; and Piericci, Angiolo, 3,685,317.

Pines Engineering Co., Inc.: *See—*
Sindelar, Ernest C., 3,685,334.

Pipe Line Development Co.: *See—*
Smith, Joseph B.; and Gardner, Ronald D., 3,685,545.

Piper, John, to Union Carbide Corporation. Electrolytic capacitor with separate interconnected anode bodies. 3,686,535, Cl. 317-230.000.

Pirelli S.p.A.: *See—*
Olcelli, Gian Battista; Caliari, Sergio; and Montessori, Giuseppe, 3,686,632.

Pitney Bowes-Alpex, Inc.: *See—*
Berler, Robert M., 3,685,723.

Pittet, Alan O.; Mason, Michael E.; Theimer, Ernst T.; and Tibbetts, Merrick S., to International Flavors & Fragrances Inc. Bicyclic pyrazines having from six to ten carbon atoms in the hydrocarbon ring. 3,686,177, Cl. 260-250.00r.

Pittman, Maurice B. Rear view mirror wiper mechanism. 3,685,087, Cl. 15-250.240.

Pitzer, Emory W., to Phillips Petroleum Company. Catalytic dehydrogenation. 3,686,346, Cl. 260-680.00e.

Planche, Jean, to Schlumberger Technolgy Corporation. Sondes with articulated arms used in well logging. 3,685,158, Cl. 33-178.00f.

Plasser, Franz; and Praschl, Wilhelm, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Track position measuring bogie. 3,685,157, Cl. 33-145.000.
Plasser, Franz; and Theurer, Josef. Method and apparatus for the continuous replacement of an old track by a new track. 3,685,456, Cl. 104-2.000.
Plasser, Franz; Theurer, Josef; and Folser, Karl, to Plasser, Franz, Bahnbaumaschinen-Industrie-Gesellschaft m.b.H. Ballast treating machine. 3,685,589, Cl. 171-16.000.
Plasser, Franz, Bahnbaumaschinen-Industrie-Gesellschaft m.b.H.: *See*—
Plasser, Franz; Theurer, Josef; and Folser, Karl, 3,685,589.
Plasson Maagan Michael Industries, Ltd.: *See*—
Kantor, Itzhak, 3,685,495.
Plastics, Inc.: *See*—
Eckdahl, Thomas Harold, 3,685,687.
Platt, William G., to Remington Arms Company, Inc. Laser ignition system. 3,685,392, Cl. 89-28.000.
Platz, Rolf: *See*—
Brunner, Erwin; Platz, Rolf; Taglieber, Kurt; and Weinfurter, Kurt, 3,686,344.
Plotnikoff, Nicholas Peter, to Abbott Laboratories. Combination of 1-dopa and 2-imino-5-phenyl-oxazolidinone used to treat Parkinson's disease. 3,686,409, Cl. 424-272.000.
Podmore, Dennis: *See*—
Bradshaw, Arthur; and Podmore, Dennis, 3,685,940.
Poehler, Guenter; Suter, Hubert; Wirth, Friedrich; and Walter, Johann Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of phthalic anhydride. 3,686,229, Cl. 260-346.400.
Pohle, Hans: *See*—
Arnold, Herbert; Brock, Norbert; Kuhas, Engelbert; Lenke, Dieter; and Pohle, Hans, 3,686,311.
Polaroid Corporation: *See*—
Coughlan, Edward R., 3,685,416.
Lehmann, Walter G., 3,685,412.
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, to American Cyanamid Company. Substituted aminoethylindoles. 3,686,213, Cl. 260-326.150.
Polevy, John H.: *See*—
Holland, Dewey G.; and Polevy, John H., 3,686,288.
Poloroid Corporation: *See*—
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,685,991.
Polymer Corporation Limited: *See*—
Robinson, Keith J.; and Pfisterer, Heinz A., 3,686,364.
Polytype AG: *See*—
Aebersold, Rene; and Lehmann, Werner, 3,685,441.
Pomeroy, J. A., & Company: *See*—
Kowell, Edward L., 3,685,782.
Pommer, Ernst-Heinrich: *See*—
Hock, Karl Ludwig; and Pommer, Ernst-Heinrich, 3,686,256.
Sanne, Walter; Koenig, Karl-Heinz; Pommer, Ernst-Heinrich; and Stummeyer, Herbert, 3,686,399.
Pond, Robert B., Sr., to United States Steel Corporation. Method of quenching metal filament in froth. 3,685,568, Cl. 164-89.000.
Pool, Eldert B.: *See*—
Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, 3,685,536.
Porret, Daniel: *See*—
Habermeier, Juergen; Batzer Hans; Porret, Daniel; Peter, Heinrich; and Fechtig, Bruno, 3,686,174.
Porta Service Inc.: *See*—
Cable, Russell D.; and Brenneman, Homer K., 3,685,535.
Porter, Allan William Henry, to Saurer, Adolph, Ltd. Method for shedding in weaving machines and device for performing the method. 3,685,550, Cl. 139-55.000.
Porter, Samuel, Jr.: *See*—
Makhlouf, Joseph M.; and Porter, Samuel, Jr., 3,686,111.
Poscaud, Xavier: *See*—
Malen, Charles; Danree, Bernard; and Poscaud, Xavier, 3,686,190.
Posselt, Klaus; and Thiele, Kurt, to Deutsche Gold- und Silber-Scheidenstalt vormals Roessler. Pyrazole and pyrazolone aminoketones. 3,686,206, Cl. 260-310.00r.
Posser, Eugene H.: *See*—
Lorenz, Howard I.; and Posser, Eugene H., 3,685,600.
Posta, Joseph M.: *See*—
Mahaffy, Reid A.; Dunkerley, James B.; and Posta, Joseph M., 3,685,251.
Potter, Charles William, to Weston, Charles, and Company Limited. Method of making oil seals. 3,685,127, Cl. 29-400.000.
Pottharst, John E., Jr. Liquid level control assembly. 3,686,451, Cl. 200-84.00r.
Pounder, Edwin: *See*—
Casani, John R.; and Pounder, Edwin, 3,685,478.
Pounder, Edwin; and Casani, John R., to Transdynamics, Inc. Course-made-good apparatus for sailboats. 3,685,352, Cl. 73-178.00r.
Powell, Mabrin P.; and Nauman, Mark R., to U.S. Plywood-Champion Papers Inc. Pressure sensitive record system. 3,686,015, Cl. 117-36.700.
Power, Basil Dixon, to British Oxygen Company, Limited, The. Vacuum pumps. 3,686,474, Cl. 219-271.000.
Powers Patrick; Graham, Reginald; and Bingham, Richard Albert, to Associated Electrical Industries Limited. Mass spectrometer electrode gap control. 3,686,683, Cl. 315-357.000.
Powers, William J., III: *See*—
Bigdon, Orville W.; Edwards, Robert S.; and Powers, William J., III, 3,686,243.
PPG Industries, Inc.: *See*—
Drummond, Warren W., 3,685,764.
Hughes, Thomas H., 3,685,122.
Makhlouf, Joseph M.; and Porter, Samuel, Jr., 3,686,111.
Praschl, Wilhelm: *See*—
Plasser, Franz; and Praschl, Wilhelm, 3,685,157.
Precision Metalsmiths, Inc.: *See*—
Horton, Robert A., 3,686,006.
Precision Screen Machines, Inc.: *See*—
Jaffa, David, 3,685,085.
Precision Specialties, Inc.: *See*—
Baer, John S.; and Weatherby, John H., 3,685,622.
Prekel, Patricia A.: *See*—
Pappo, Raphael; and Prekel, Patricia A., 3,686,226.
Preston, Jerome A., to Essex International, Inc. Wire conductor having a resin coating modified with amine-silicone reaction product. 3,686,030, Cl. 117-232.000.
Preud'Homme, Jean: *See*—
Mancy, Denise; Ninet, Leon; and Preud'Homme, Jean, 3,686,396.
Price, Albert E.; and Mansen, Robert L., to General America Transportation Corporation. Railway tank car heating arrangement. 3,685,458, Cl. 105-358.000.
Priebe, Frank K., to United States of America, Army. Monolithic coupled crystal resonator filter having cross impedance adjusting means. 3,686,592, Cl. 333-71.000.
Priebe, Fritz, to Schloemann Aktiengesellschaft. Hydraulic sheet-stretching machines. 3,685,333, Cl. 72-302.000.
Primicerio, Fernando: *See*—
Benigno, Paolo; and Primicerio, Fernando, 3,685,642.
Pritsche, Donald L.: *See*—
Pugh, Robert E.; and Pritsche, Donald L., 3,685,587.
Procter & Gamble Company, The: *See*—
Kropp, Paul J., 3,686,097.
Lyness, Warren I.; and Thompson, James E., 3,686,124.
Morton, David Russell, 3,686,025.
Proctor, Denver L.: *See*—
Proctor, Rudy R.; and Proctor, Denver L., 3,685,803.
Proctor, Rudy R.; and Proctor, Denver L., to Jet-X Corporation. Cup and lid therefor. 3,685,803, Cl. 259-1.000.
Profressive Machine Company, Inc.: *See*—
Ludy, William F., Jr., 3,685,744.
Propst, Robert L. Apparatus for felling and bunching trees. 3,685,558, Cl. 144-3.00d.
Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Afanasiev, Mikhail Andreevich. Stand for assembling and pressing magnetic circuits of power transformers. 3,685,435, Cl. 100-8.000.
Pugh, Robert E.; and Pritsche, Donald L., to Fike Metal Products Corporation. Light responsive activating apparatus for fire or explosion suppressing systems. 3,685,587, Cl. 169-19.000.
Puster, Louis M.; and Caldwell, Edward M., to Robertshaw Controls Company. Pneumatic control system and pneumatic control device for such a system or the like. 3,685,789, Cl. 251-61.200.
Putin, Enrico. Conveyor rollers. 3,685,636, Cl. 198-127.000.
Pye Limited: *See*—
Callendar, Max V.; and Cox, Victor J., 3,686,670.
Quaedvlieg, Mathieu: *See*—
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu, 3,685,951.
Quinn, Governor V., to Three-Line Research and Developments Company, Inc. Training hurdle. 3,685,824, Cl. 272-59.00c.
Rachlin, Albert Israel: *See*—
O'Brien, Jay Philip; and Rachlin, Albert Israel, 3,686,331.
Radiation Research Corporation: *See*—
Peters, Edward M., 3,686,066.
Radoi, William J.: *See*—
Malchman, Franklin L.; and Radoi, William J., 3,686,634.
Raidl, John H. Precise safety device. 3,685,686, Cl. 220-89.00a.
Rainbow Crafts, Inc.: *See*—
Getgey, William F.; and Meth, Harry, 3,685,828.
Meth, Harry; and Greenberg, Allen A., 3,685,936.
Rampe, John F., to Rampe Research. Orbital finishing system. 3,685,213, Cl. 51-163.000.
Rampe Research: *See*—
Rampe, John F., 3,685,213.
Randolph, George J. J., Jr. Manufacture of piezoresistive bars. 3,685,110, Cl. 29-25.350.
Ranno, Albert J. Pallet. 3,685,464, Cl. 108-58.000.
Rapid-American Corporation: *See*—
Schneider, Marvin, 3,685,620.
Raschke, Herbert A., to Bullard, E. D., Company. Apparatus for mounting a face shield onto a rigid hat. 3,685,054, Cl. 2-10.000.
Raschke, Herbert A., to Bullard, E. D., Company. Hood with improved air inlet. 3,685,512, Cl. 128-142.700.
Ratajczyk, James Daniel: *See*—
Swett, Leo Ralph; Ratajczyk, James Daniel; and Young, Patrick Richard, 3,686,171.
Raterman, Donald E., to Addressograph-Multigraph Corporation. Apparatus and means for making duplicates of a microfilm original. 3,685,906, Cl. 355-103.000.
Ratkowski, Thomas A., to Abex Corporation. Dipper teeth. 3,685,178, Cl. 37-142.00a.

Raue, Roderich; and Kuhlthau, Hans-Peter. Process for dyeing polyacrylonitrite textile materials with basic dyestuffs. 3,685,956, Cl. 8-177.0ab.

Rave, Terence W., to Hercules Incorporated. Process of preparing aliphatic nonfunctional oximes. 3,686,280, Cl. 260-482.00r.

Rawcliffe, Gordon Hindle: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,686,553.

Rawlings, James Earl: *See—*
Samuel, Jon Michael Glen; and Rawlings, James Earl, 3,686,051.

Rawls, Vaughn, to National-Standard Company. Method of centering tire carcass in mold. 3,686,391, Cl. 264-315.000.

Raymond International, Inc.: *See—*
Fuller, Frank M., 3,685,302.
Phares, Lindsey J., 3,685,583.

Raymond Lee Organization, Inc., The: *See—*
Kimmel, Ray D., 3,685,661.

Raytheon Company: *See—*
Goldstone, Bertram J., 3,686,490.

Raznov, Jerry L., to Ametek, Inc. Adjustment mechanism for cabin altimeter rotatable light head. 3,685,360, Cl. 73-384.000.

RCA Corporation: *See—*
Banfield, Joseph Henry; Husni, Saleem Ynes; and Greig, William John, 3,686,080.
Dischert, William Arnold, 3,686,590.
Frey, Harry Robert, 3,685,994.
Gardiner, Arthur Noel, 3,685,137.
Guadagnolo, Robert Noel, 3,686,516.
Napoli, Louis Sebastian; and Hughes, John Joseph, 3,686,624.
Nyul, Paul, 3,686,543.
Schlieben, Ernest William, 3,685,857.
Schwartzman, Stanley, 3,686,539.
Upadhyayula, Chainulu Lakshminarasimha; and Perlman, Berry Stuart, 3,686,578.

Reade, Stephen E.: *See—*
Kelem, Tester S.; and Reade, Stephen E., 3,686,565.

Readi-Temp Inc.: *See—*
Donnelly, William R., 3,685,507.

Recherche et Industrie Theropeutiques R.I.T.: *See—*
Huygelen, Constant; and Peetermans, Julien, 3,686,394.

Redington Counters, Inc.: *See—*
McConnell, Edwin J., 3,686,481.

Reed, Donald E.: *See—*
Cover, Paul F.; Rife, John W.; Kemper, Clyde F.; and Reed, Donald E., 3,685,519.

Reed, Jock L., to Riverton Industries, Inc. Device for creating spray from a water ski. 3,685,068, Cl. 9-310.00r.

Reeds, John W., Jr., to Minnesota Mining and Manufacturing Company. Separation color recorder system. 3,685,899, Cl. 355-32.000.

Reeves, John F.: *See—*
Lickliter, Robert Paul; and Reeves, John F., 3,685,230.

Reich, Friedrich: *See—*
Schafer, Karl; Reischl, Artur; Reich, Friedrich; and Dieterich, Dieter, 3,686,026.

Reiff, Helmut; and Dieterich, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Light fast quaternized or amine salt polyurethanes from 2-alkyl-2-dialkylaminomethyl-1,3-propone diols. 3,686,108, Cl. 260-29.2tn.

Reiner, Norbert L.: *See—*
Hunter, Bruce H.; and Reiner, Norbert L., 3,685,657.

Reischl, Artur: *See—*
Schafer, Karl; Reischl, Artur; Reich, Friedrich; and Dieterich, Dieter, 3,686,026.

Reitz, Edward G. Method of and means for indicating the position of a cup in a golf course green. 3,685,168, Cl. 35-7.00a.

Relyea, Douglas I., to Uniroyal, Inc. Benzothiophene 1,1-dioxide derivatives and method of preparing same. 3,686,216, Cl. 260-330.500.

Remington Arms Company, Inc.: *See—*
Platt, William G., 3,685,392.

Renaud, Norman Ernest: *See—*
Diddams, Donald Guy; and Renaud, Norman Ernest, 3,686,322.

Rendell, Stanley E., to Chicago Musical Instrument Co. Guitar. 3,685,385, Cl. 84-267.000.

Renfrew, Edgar Earl. Coloration of polyester textile fibers with azo dyes. 3,685,952, Cl. 8-41.00c.

Reni, Cesare: *See—*
Gualdi, Giorgio; Lugo, Luigi; and Reni, Cesare, 3,686,293.

Renoulin, Roger, to Societe Lanniounaise d'Electronique. Device for distributing high-safety time bases. 3,686,657, Cl. 340-248.00a.

Requena, Jorge Federico, to Lever Brothers Company. Window and Venetian-blind assemblies for regulating light travel. 3,685,205, Cl. 49-64.000.

Research Associates, Inc.: *See—*
Garshelis, Ivan J., 3,685,643.

Research Engineering Company: *See—*
Gulick, Ronald A.; and McEver, Robert M., Jr., 3,685,621.

Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, to Societe Nationale des Petroles d'Aquitaine Tour. Ammonoxidation of olefins. 3,686,265, Cl. 260-465.300.

Reuschel, Konrad: *See—*
Keller, Wolfgang; and Reuschel, Konrad, 3,685,973.

Revells, Robert G.: *See—*
Moyer, Henry F.; and Revells, Robert G., 3,685,714.

Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., to Le Voy's Inc. Aseptic disposable drainage receiver. 3,685,517, Cl. 128-277.000.

Reynolds, R. J., Tobacco Company: *See—*
Sherrill, Joseph H., 3,685,527.

Reynolds, Rolfe E., to Textron Inc. Automatic trouser fly fabric feeding machine and method. 3,685,471, Cl. 112-121.290.

Rezek, John R.: *See—*
Millington, Raymond J.; and Rezek, John R., 3,686,635.

Rheim Manufacturing Company: *See—*
Daugirda, Paul G., 3,685,542.

Rhodes, Herbert C. Dough pan assembly for conveying, freezing and discharging solidly frozen loaves. 3,685,313, Cl. 62-345.000.

Rhodes, Philip L.: *See—*
Brown, Roger S.; and Rhodes, Philip L., 3,685,100.

Rhone-Poulenc S.A.: *See—*
Bazouin, Andre; and Lefort, Marcel, 3,686,252.
Mancy, Denise; Ninet, Leon; and Preud'Homme, Jean, 3,686,396.
Rio, Andre, 3,686,116.

Rich, Blaine B.; and Brown, Rex M., to Thiokol Chemical Corporation. Multi-way snow grooming apparatus for ski slope. 3,685,404, Cl. 94-44.000.

Richards, Charles D. Sunken vessel locator. 3,686,656, Cl. 340-240.000.

Richards, Giles J.: *See—*
Anger, Ernest G.; Richards, Giles J.; Bloodgood, John F.; and Geiger, Roy J., 3,686,556.

Richardson, Edwin A., to Shell Oil Company. Electroless metal plating techniques for consolidation of incompetent formations. 3,685,582, Cl. 166-292.000.

Richardson-Merrell, Inc.: *See—*
Weintraub, Philip M.; and Chalfey, John R., 3,686,185.

Richter, Edward S. Apparatus for treating metals. 3,685,208, Cl. 51-5.000.

Richter, Stanley H. Adjustable door jamb. 3,685,226, Cl. 52-217.000.

Ricoh Co., Limited: *See—*
Kakiuchi, Tokusaburo; Ando, Akira; Akiyama, Hideaki; and Jinsenji, Sei, 3,685,767.

Ricoh Co., Ltd.: *See—*
Kaneko, Tamaki; and Mizuno, Katsumi, 3,685,444.

Rieter Machine Works, Ltd.: *See—*
Lamparter, Hansruedi; and Spescha, Gelli Anton, 3,686,460.
Wirz, Armin, 3,685,752.

Rife, John W.: *See—*
Cover, Paul F.; Rife, John W.; Kemper, Clyde F.; and Reed, Donald E., 3,685,519.

Rigassi, Norbert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,686,222.

Rightor, Edward, Jr.: *See—*
Burger, William H.; and Rightor, Edward, Jr., 3,685,818.

Riley, Bernard J., Jr., to Xerox Corporation. Cleaning apparatus. 3,686,035, Cl. 134-21.000.

Rindner, Wilhelm; Iannini, Americo; and Garfein, Andre, to United States of America, National Aeronautics and Space Administration. Semiconductor transducer device. 3,686,542, Cl. 317-235.00r.

Ring, Howard Daniel: *See—*
Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., 3,686,678.

Rio, Andre, to Rhone-Poulenc S.A. Semi-permeable membranes and their use. 3,686,116, Cl. 210-23.000.

Risher, Frederick L., to Morris, Philip, Incorporated. Double edge safety razor embodying flexible blade pressure control. 3,685,150, Cl. 30-74.100.

Risso, Osvaldo: *See—*
Chavarria, Melchor Julio; and Risso, Osvaldo, 3,686,687.

Rite Antotronics Corporation: *See—*
Nielsen, Tage S., 3,686,569.

Ritzenhoff, Hermann, to Gebruder Seidel KG. Screw cap for a container. 3,685,678, Cl. 215-43.00a.

Riverton Industries, Inc.: *See—*
Reed, Jock L., 3,685,068.

Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., to Xerox Corporation. Dual mode electrostatic printing. 3,686,678, Cl. 346-74.0es.

Robertshaw Controls Company: *See—*
Haskins, Lauren D.; and Kelly, Samuel T., 3,685,732.
Katcha, Jay R., 3,685,730.
Puster, Louis M.; and Caldwell, Edward M., 3,685,789.
Wolfe, Denis G.; and Eicher, Gerald H., 3,685,729.

Robertson, Louis A.: *See—*
Walbeck, Calvin; Jacoby, John M.; Gepp, Carl E.; and Robertson, Louis A., 3,685,450.

Robinson, David W., to Grace, W. R., & Co. Thermally expanding vermiculite and other thermally expandable materials, utilizing said materials as carrier and the products thereof. 3,686,134, Cl. 252-378.000.

Robinson, E S & A Limited: *See—*
Chidgey, Alfre Leonard, 3,685,718.

Robinson, Frank; and Chell, Frederick Nunnerley, to Courtaulds Limited. Knitting process. 3,685,316, Cl. 66-64.000.

Robinson, Keith J.; and Pfisterer, Heinz A., to Polymer Corporation Limited. Impermeable polymeric compositions. 3,686,364, Cl. 260-876.00b.

Rochet, Jean. Methods of making incandescent lamps. 3,685,881, Cl. 316-19.000.

Rockwell Manufacturing Company: *See—*
Bake, Earl Allen; Pool, Eldert B.; Hankosky, Andrew; Milleville, Bertram J.; and Fowler, John Hyde, 3,685,536.
Gestler, David J.; Kovats, Zoltan; and Kolakowski, Alfred W., 3,685,353.
Hall, George D., 3,686,524.
Koehler, Heinrich P., 3,685,594.

Rodgers, Franklin A., to Pactide Corporation. Self-limiting electrolytic heater. 3,685,259, Cl. 55-198.000.

Rody, Jean: *See—*
Kirchmayr, Rudolf; and Rody, Jean, 3,686,202.

Rogers, Chester D., to Jacobsen Manufacturing Company. Combination soil conditioner and seeder. 3,685,469, Cl. 111-87.000.

Rogers, Waldo I.; and Van Pelt, Denis L., to Rusco Industries, Inc. Static reader system for magnetic cards. 3,686,479, Cl. 235-61.11d.

Rohde & Schwarz: *See—*
Scheuerecker, Friedrich; and Schlagbauer, Johann, 3,686,673.
Sonnberger, Hanfried, 3,686,455.

Rohm and Haas Company: *See—*
Kirch, Lawrence S., 3,686,301.

Rohn, Charles L., to Mobil Oil Corporation. Formation of elastic and high-tenacity fibers from butene-1 homopolymers and copolymers. 3,686,385, Cl. 264-164.000.

Rohosy, Soma M.: *See—*
Frye, Kenneth G.; Lucas, Robert G.; and Rohosy, Soma M., 3,685,379.

Rohr Corporation: *See—*
Christopher, Ronald C., 3,685,737.
Duvvuri, Tirumalesa, 3,685,611.
Frankie, Thomas T.; and Pascoe, Larry B., 3,685,716.

Rohrle, Anto, to Lohf & Tillipaul, Firma. Trueing device for grinding wheels. 3,685,505, Cl. 125-11.000.

Roland, George W.; Hopkins, Richard H.; and Melamed, Nathan T., to Westinghouse Electric Corporation. Oxyapatite lasers. 3,686,586, Cl. 331-94.500.

Roloff, Walter Louis, to Malcolm, Andrew, Furniture Co., The. Urethane press. 3,685,944, Cl. 425-410.000.

Romanin, Bruno. Method for producing paper-like laminated material reinforced with non-woven fabric, and reinforced composite laminated product therefrom obtained. 3,686,062, Cl. 161-57.000.

Romero, Frank: *See—*
Artle, Robert E., Jr.; and Romero, Frank, 3,685,174.

Roos, Hugo: *See—*
Fischer, David; Kohler, Rudolf; Roos, Hugo; and Merker, Joachim, 3,685,845.

Rosa, Daniel F., to Medi-Plas Sciences, Inc. Roof ventilator. 3,685,426, Cl. 98-83.000.

Rosaen, Nils O. Flow indicator device having pressure balanced sealing shaft. 3,685,354, Cl. 73-228.000.

Rose, Sidney. Portable display device. 3,685,666, Cl. 211-178.000.

Rosenkranz, Hans-Jurgen; Rudolph, Hans; and Heine, Hans-Georg, to Farbenfabriken Bayer Aktiengesellschaft. Initiators for the photopolymerisation of unsaturated compounds. 3,686,084, Cl. 204-159.150.

Rosenwald, Robert H., to Universal Oil Products Company. Reaction product of epichlorohydrin compound and beta-alkylamine. 3,686,315, Cl. 260-584.00r.

Rosseay, Leon B.: *See—*
Fletcher, William E.; and Rosseay, Leon B., 3,686,639.

Rosser, Daniel B.: *See—*
Livezey, John P.; and Rosser, Daniel B., 3,686,541.

Rosser, John Anthony: *See—*
Ogilvy, Harry Heggie; Tuck, Elizabeth Margaret; Dobbs, David John Miller; and Rosser, John Anthony, 3,685,454.

Rost, Gunter: *See—*
Safrata, Leon; Beifuss, Horst; Bormann, Hans; and Rost, Gunter, 3,685,242.

Rotary Profile Anstalt: *See—*
Marcovitch, Jacob, 3,685,331.

Rothschild, John J., to General Motors Corporation. Gravity flow sand reclamation process. 3,686,034, Cl. 134-2.000.

Rott, John G., to Scope Incorporated, mesne. Print head carriage mechanism for impactless printer. 3,685,629, Cl. 197-66.000.

Roulo, Ronald H., to Continental Can Company, Inc. Method and apparatus for transporting a coated paper web. 3,685,710, Cl. 226-97.000.

Rousseau, Claude, to C.I.T.-Compagnie Industrielle des Telecommunication. Pulse discriminator. 3,686,438, Cl. 178-69.600.

Roussel-UCLAF: *See—*
Amiard, Gaston; Nomine, Gerard; and Torelli, Vesperto, 3,686,241.

Routery, Herbert L. Dinghy securing and stowing means. 3,685,476, Cl. 114-43.500.

Rowe, William Wallace: *See—*
Frick, Roy C.; Calvin, Victor E.; Sharpe, John C.; and Rowe, William Wallace, 3,686,054.

Rowlands Electrical Accessories Limited: *See—*
Ruston, Reginald, 3,686,621.

Rozenberg, Maxim Davidovich: *See—*
Geshelin, Boris Mikhailovich; Maximov, Mikhail Mikhailovich; Rozenberg, Maxim Davidovich; and Yakovleva, Nadezhda Evgenievna, 3,686,491.

RTE Corporation: *See—*
Link, Edwin A.; and Sankey, Edward L., 3,686,604.

RTV-Skf Officine di Villar Perosa S.p.A.: *See—*
Giaccone, Giuseppe, 3,685,772.

Rubenstein, Louis D. Toll booth system. 3,686,627, Cl. 340-31.00r.

Rudolf, Artur. Connection for glass fiber reinforced or the like. 3,685,862, Cl. 287-20.929.

Rudolph, Hans: *See—*
Rosenkranz, Hans-Jurgen; Rudolph, Hans; and Heine, Hans-Georg, 3,686,084.

Rudolph, Rene; and Tan, Tjhing Thian, to Aktiengesellschaft Brown, Boveri & Cie. Apparatus for increasing the arc voltage in relation to the particular number of spark gaps which define the threshold characteristics in magnetically blown surge arrestors. 3686,532, Cl. 317-70.000.

Rudszinat, Willy; and David, Harry, to Hauni-Werke Korber & Co., KG. Method and apparatus for manipulating cigarettes or the like. 3,685,633, Cl. 198-31.0aa.

Rudy, Marion F., 25% to Bogert, Robert C. Inflatable article of footwear. 3,685,176, Cl. 36-71.000.

Ruehlen, Forrest N., to Phillips Petroleum Company. Process for recovery and separation of perhalogenated fluorocarbons. 3,686,082, Cl. 204-59.000.

Ruetman, Sven H.: *See—*
Johnston, Howard; and Ruetman, Sven H., 3,686,193.

Ruger Sturm & Co., Inc.: *See—*
Sefried, Harry H., II, 3,685,193.

Rumpf, Jurg: *See—*
Weis, Claud Dieter; and Rumpf, Jurg, 3,685,982.

Runton, Leslie A., to Industrial de Cascarillas-Ciscann S.A. Method of producing molded articles from coffee bean hulls. 3,686,384, Cl. 264-122.000.

Rupp, Hans-Dieter: *See—*
Meyer, Gerhard; Magerlein, Helmut; and Rupp, Hans-Dieter, 3,686,328.

Rusco Industries, Inc.: *See—*
Rogers, Waldo I.; and Van Pelt, Denis L., 3,686,479.

Russell, Thomas E., to Flintkote Company, The. Pressure-sensitive hot-melt adhesives. 3,686,107, Cl. 260-270.

Ruston, Reginald, to Rowlands Electrical Accessories Limited. Electric lampholder. 3,686,621, Cl. 339-67.000.

Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, to Tsentralny Nauchno-Issledovatelsky Institut Chernoi Metallurgii im. I.P. Bardina. Mixture for protecting surface of metal i process of casting. 3,685,986, Cl. 75-96.000.

Rutt, Paul A., to Tenneco Inc. Exhaust diffuser. 3,685,615, Cl. 181-35.00r.

Ryder, Ernest A. Trail marker. 3,685,482, Cl. 116-114.00r.

S.A. PRB: *See—*
Verzele, Maurice G. E., 3,686,316.

Saam, John C., to Dow Corning Corporation. Method of blending polyorganosiloxane and organic vinylic thermoplastics and products thereof. 3,686,356, Cl. 260-825.000.

Safrata, Leon; Beifuss, Horst; Bormann, Hans; and Rost, Gunter, to Volkswagenwert Aktiengesellschaft. Wall structures. 3,685,242, Cl. 52-495.000.

Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, to Sumitomo Chemical Co. Ltd. Formulation method of vulcanization accelerator. 3,686,132, Cl. 252-182.000.

Saito, Shigeru: *See—*
Yoshino, Takachika; Saito, Shigeru; Sasaki, Yutaka; and Nakamura, Yoshimi, 3,686,138.

Sakamoto, Masahiro: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.

Sakamoto, Toemon, to Enshu Limited. Nozzle positioner. 3,685,553, Cl. 139-127.00p.

Sakomura, Toshio; Shimizu, Akihiko; and Mori, Tadahiro, to Toyo Soda Manufacturing Co., Ltd. Process for recovering acrylonitrile in chloroprene monomer. 3,686,261, Cl. 260-465.900.

Sale, Oliver H., Jr.; and Fincher, James R. Structural element for use in the construction of panels, modules, and building structures. 3,685,229, Cl. 52-618.000.

Salem Tool Company, The: *See—*
Young, William G., 3,685,865.

Salenbien, Albert L., Jr.; and Wood, William D., to Worldtronic Inc. Production monitoring system for plurality of work stations. 3,686,653, Cl. 340-213.00q.

Samcoe Holding Corporation: *See—*
Cecere, Andrew P., 3,685,108.

Samuel, Jon Michael Glen; and Rawlings, James Earl, to Diva Cars Limited, t/a and Enfield Automotive. Method of making laminated motor land vehicle body. 3,686,051, Cl. 156-212.000.

Sanchez, Jose: *See—*
Groepper, Jurgen; and Sanchez, Jose, 3,686,102.

Sandelman, Morris D., to Pale Corporation. Buckle. 3,685,106, Cl. 24-265.0ws.

Sandera, Jiri, to TRW Inc. Microalloy epitaxial varactor. 3,685,141, Cl. 29-576.000.

Sanders Associates, Inc.: *See—*

Gabor, William D., 3,686,527.
Sanders, Wes E.; and Allen, John W., to Stanray Corporation. Hinge construction. 3,685,093, Cl. 16-147.000.
Sandoz-Wander, Inc.: *See—*
Cooke, George A.; and Houlihan, William J., 3,686,178.
Houlihan, William J.; and Manning, Robert E., 3,686,207.
Manning, Robert E., 3,686,309.
Sankey, Edward L.: *See—*
Link, Edwin A.; and Sankey, Edward L., 3,686,604.
Sanne, Walter; Koenig, Karl-Heinz; Pommer, Ernst-Heinrich; and Stummeyer, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method of controling fungi. 3,686,399, Cl. 424-248.000.
Santa Fe International Corporation: *See—*
Lloyd, Samuel H., III, 3,685,305.
Santa-Maria, Enrique: *See—*
Denel, Jean; Krebs, Jean-Pierre; and Santa-Maria, Enrique, 3,686,458.
Sarofeen, George M. J., to Vaerco, Inc. Two piece lens grinding lap. 3,685,214, Cl. 51-209.0dl.
Sasaki, Rokuro: *See—*
Takashashi, Yoshinori; Sasaki, Rokuro; Watanabe, Kikuo; and Takizawa, Masau, 3,685,618.
Sasaki, Tatsuji: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.
Sasaki, Yutaka: *See—*
Yoshino, Takachika; Saito, Shigeru; Sasaki, Yutaka; and Nakamura, Yoshimi, 3,686,138.
Sassin, Wolfgang: *See—*
Doose, Conrad; and Sassin, Wolfgang, 3,686,423.
Sato, Fujio; and Homma, Ko, to Akai Electric Company, Limited. Easily engageable magnetic head with visible gap aligning means. 3,686,466, Cl. 179-100.20c.
Sato, Hideo: *See—*
Ohfuka, Toshio; Sato, Hideo; and Uchida, Yasuo, 3,686,019.
Sato, Isao. Power transmission socket for bobbins. 3,685,753, Cl. 242-46.210.
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Electrophotographic process. 3,685,907, Cl. 355-17.000.
Sato, Yoshihiro: *See—*
Henmi, Zenzo; Sasaki, Tatsuji; Matsui, Yuji; Maegawa, Harumi; Sato, Yoshihiro; Gotoh, Tsuneyasu; and Komatsu, Masahiro, 3,686,042.
Saul, Ivar, to Tektronix, Inc. Camera computer apparatus. 3,685,424, Cl. 95-64.00b.
Saunders, John H. Toothbrush holder. 3,685,660, Cl. 211-60.00r.
Saurer, Adolph, Ltd.: *See—*
Porter, Allan William Henry, 3,685,550.
Savage, Michael Philip: *See—*
Hoyle, William; and Savage, Michael Philip, 3,686,170.
Sawa, Kenneth B.; and Neti, Radhakrishna Murty, to Beckman Instruments, Inc. Electrochemical cell. 3,686,091, Cl. 204-195.00f.
Sawa, Yoichi: *See—*
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, 3,686,167.
Sayers, Ben, Limited: *See—*
Letters, Hope Lowrie, 3,685,135.
Sayles, David C., to United States of America, Army. Process for making polyketene-imines. 3,686,310, Cl. 260-566.00r.
Scanidi, Adam M., to Weatherhead Company, The. Hose coupling. 3,685,860, Cl. 285-249.000.
Scarbrough, Alfred D., to Bunker-Ramo Corporation, The. Method of making a batch fabricated magnetic wire memory. 3,685,145, Cl. 29-604.000.
Schaad, William J.: *See—*
Black, Charles E., III; and Schaad, William J., 3,686,449.
Schaefer, Richard J. Recirculating ozone treatment apparatus. 3,685,656, Cl. 210-195.000.
Schaeffer, Georg: *See—*
Otten, Joachim; and Schaeffer, Georg, 3,686,300.
Schafer, Karl; Reischl, Artur; Reich, Friedrich; and Dieterich, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Process for finishing textile materials which contain wool. 3,686,026, Cl. 117-141.000.
Schaible, Siegried: *See—*
Bruer, Dirk; Schaible, Siegried; Wagenblast, Ernst; and Hohlweger, Heinz, 3,685,674.
Schaller, Robert L., to Sunstrand-Engelberg, Inc. Centerless grinding machine. 3,685,212, Cl. 51-103.0tf.
Schauer, George W., Jr., to General Motors Corporation. Oven with temperature limiting protection and indicating. 3,686,476, Cl. 219-413.000.
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous manufacture of 1-methyl-3-phenyl-indans. 3,686,339, Cl. 260-668.00f.
Scheinpflug, Hans: *See—*
Hoffmann, Hellmut; Scheinpflug, Hans; Kume, Toyohiko; and Yasui, Kazuomi, 3,686,369.
Schenck, Leslie Millard: *See—*
Eisenan, Fred S., Jr.; Schenck, Leslie Millard; and Beiswanger, John P. G., 3,686,368.
Schenker, Karl, to Ciba Corporation. 2-Aryl-2,3,4,5-Tetrahydro-1,4-benzoxazepines. 3,686,217, Cl. 260-333.000.
Scherb, Helmut: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.
Scherer, Otto; and Mildenberger, Hilmar, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Phosphoric acid esters. 3,686,200, Cl. 260-308.00r.
Scherhag, Bernhard: *See—*
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Bernhard; and Hausweiler, Arnold, 3,686,194.
Schering Corporation: *See—*
Sherlock, Margaret H., 3,686,406.
Schermuly Limited: *See—*
Bowring, Graeme, 3,685,451.
Scherzberg, Herbert, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of moderately elasti crimp yarns. 3,685,276, Cl. 67-197.0ts.
Scheuerecker, Friedrich; and Schlagbauer, Johann, to Rohde & Schwarz. Directional-beam antenna. 3,686,673, Cl. 343-807.000.
Schiappa, Antonio: *See—*
Goff, Richard E.; and Schiappa, Antonio, 3,685,549.
Schindler, Herbert; and Winter, Gerhard, to Schon & Cie Gesellschaft mit beschrankter Haftung, Firma. Shoe-lasting machine. 3,685,072, Cl. 12-12.000.
Schindler, Robert; Schmidts, Kurt; and Wiegel, Wolfgang, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Plastics box for magnetic recording media in tape form, particularly reels of magnetic tape. 3,685,684, Cl. 220-60.00r.
Schindler, Walter; and Schmid, Erich, to Ciba Geigy Corporation. Composition and method of use for treating nausea and mental disorders using thiepin derivatives. 3,686,402, Cl. 424-250.000.
Schirtzinger, Joseph F., to Air Logistics Corporation. Fiber reinforced parallel resinous structure fabrication. 3,686,048, Cl. 156-161.000.
Schlagbauer, Johann: *See—*
Scheuerecker, Friedrich; and Schlagbauer, Johann, 3,686,673.
Schlegel Manufacturing Company, The: *See—*
Blose, Werner, 3,685,231.
Schlichte, Max, to Siemens Aktiengesellschaft. Process and circuit arrangement for the transmission of message signals, in particular PCM message signals, from a transmission station to a receiving station. 3,686,442, Cl. 179-15.0b.
Schlieben, Ernest William, to RCA Corporation. Bookbinding. 3,685,857, Cl. 281-26.000.
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, to Farbenfabriken Bayer Aktiengesellschaft and Erdolchemie Gesellschaft mit beschrankter Haftung. Process for recovering cyclopentene, isorene and a diolefin stream from the C_5-cut obtained by petroleum cracking. 3,686,349, Cl. 260-681.500.
Schliffke, Warner F.: *See—*
Frey, Karl A.; and Schliffke, Warner F., 3,685,216.
Schloemann Aktiengesellschaft: *See—*
Priebe, Fritz, 3,685,333.
Schlumberger Technolgy Corporation: *See—*
Planche, Jean, 3,685,158.
Schlumberger Technology Corporation: *See—*
Kisling, James W., III, 3,685,599.
Nutter, Benjamin P., 3,685,598.
Schlusnus, Karl-Heinz: *See—*
Bottcher, Wolfgang; Kopineck, Hermann-Josef; Schlusnus, Karl-Heinz; and Sommerkorn, Gernot, 3,685,348.
Schmid, Erich: *See—*
Schindler, Walter; and Schmid, Erich, 3,686,402.
Schmid, Hans, to Mono-Sport GmbH. Ski. 3,685,846, Cl. 280-11.13w.
Schmid, Hermann, to General Electric Company. Limited average voter circuitry. 3,686,493, Cl. 235-193.000.
Schmidl, Ernst: *See—*
Boldingh, Jan; Heslinga, Lammert; Schmidl, Ernst; and Syrovataka, Rudolf, 3,686,127.
Schmidts, Kurt: *See—*
Schindler, Robert; Schmidts, Kurt; and Wiegel, Wolfgang, 3,685,684.
Schmitz-Josten: *See—*
Gruber, Hermann; and Schmitz-Josten, 3,686,140.
Schmutzler, Richard W.: *See—*
Scott, Merton E.; Schmutzler, Richard W.; and Cleminshaw, Douglas R., 3,685,097.
Schneider, Helmut E., to Werner & Mertz GmbH., Firma. Apparatus for producing an assembly of interconnected and relatively movably displaceable molded parts. 3,685,933, Cl. 425-109.000.
Schneider, Marvin, to Rapid-American Corporation. Club bag. 3,685,620, Cl. 190-48.000.
Schnell, Hermann: *See—*
Gilch, Heinz; and Schnell, Hermann, 3,686,266.
Schnuchel, Gunther: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.
Schock, Carlyle E. Tree jack directional frame system. 3,685,800, Cl. 254-93.00r.
Schofield, John Allan. Azeotropic composition of tetrachlorodifluoroethane isopropanol and water. 3,686,131, Cl. 252-171.000.

Scholz, Gunther, to Gebruder Junghans G.m.b.H., Firma. Continuous switching device for the gear mechanism of an electric wrist watch. 3,685,279, Cl. 58-28.00d.
Schon & Cie Gesellschaft mit beschrankter Haftung, Firma: *See*— Schindler, Herbert; and Winter, Gerhard, 3,685,072.
Schoppe, Fritz E. Method of stirring materials and apparatus therefor. 3,685,806, Cl. 259-108.000.
Schrader, Gerhard; and Hermann, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Dithiocarbonic acid O-ethyl-S-2-/2 (p-chlorophenylmercapto)-3-chloropropyl/ esters. 3,686,257, Cl. 260-455.00b.
Schreyer, Frinz: *See*— Landwehrkamp, Hans; Schreyer, Frinz; and Handschuch, Karl, 3,685,267.
Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See*— Landwehrkamp, Hans; Schreyer, Frinz; and Handschuch, Karl, 3,685,267.
Schulz, Heinrich: *See*— Beck, Erich; and Schulz, Heinrich, 3,685,748.
Schulz, Manfred, to General Signal of Canada, Ltd. Annuciator system with circuitry producing an output alarm signal for a discontinuous lamp. 3,686,667, Cl. 340-409.000.
Schulze, John J.: *See*— Lux, George K.; Ellis, James B.; and Schulze, John J., 3,685,894.
Schuran, Fred A., to AMF Incorporated. Racing centrifugal clutch assembly. 3,685,366, Cl. 74-230.17e.
Schwartz, Larry L. Club head velocity meter. 3,685,909, Cl. 356-28.000.
Schwartzman, Stanley, to RCA Corporation. Gallium arsenide semiconductor device with improved ohmic electrode. 3,686,539, Cl. 317-234.00r.
Schweikl, Ludwig: *See*— Leibach, Heinrich; Schweikl, Ludwig; and Lottes, Paul, 3,685,738.
Schweis, Robert W., to Crutcher-Resources Corporation. Side-loading self-propelled material transporting device. 3,685,673, Cl. 214-77.000.
Schweizer, Gottfried: *See*— Smolka, Thomas G.; and Schweizer, Gottfried, 3,685,847.
Schwieter, Ulrich: *See*— Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,686,222.
Schwing, Friedrich; and Meinken, Bernard. Device for the spreading of concrete. 3,685,543, Cl. 137-615.000.
Schwochow, Friedrich; Heinze, Gerhard; and Weber, Horst, to Farbenfabriken Bayer Akteingesellschaft. Process for preparation of faujasites-type zeolites. 3,685,963, Cl. 423-329.0on.
Scope Incorporated, mesne: *See*— Rott, John G., 3,685,629.
Scott & Williams, Inc.: *See*— Millar, John J., 3,685,321.
Scott, John Grayson. Self-releasing attachment device for fishing. 3,685,196, Cl. 43-43.120.
Scott Machine Development Corporation: *See*— Scott, Merton E.; Schmutzler, Richard W.; and Cleminshaw, Douglas R., 3,685,097.
Scott, Merton E.; Schmutzler, Richard W.; and Cleminshaw, Douglas R., to Scott Machine Development Corporation. Clam opener tools. 3,685,097, Cl. 17-75.000.
Scott, Warren J. Method for making dental coping. 3,685,115, Cl. 29-160.600.
Scott, William Anthony, to Beckman Instruments, Ltd. Radiation attenuating comb assembly. 3,685,885, Cl. 350-271.000.
Scully, Thomas A.: *See*— Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, 3,686,023.
Search, Robert L.: *See*— Broyles, William R.; and Search, Robert L., 3,686,043.
Searle, G. D., & Co.: *See*— Pappo, Raphael; and Prekel, Patricia A., 3,686,226.
Seatech Corporation: *See*— Peroni, George J., 3,685,480.
Seatech Engineering, Inc.: *See*— Bildsoe, Jorgen S., 3,685,637.
Sebastiani, Martin. Spray guns. 3,685,743, Cl. 239-415.000.
Sefried, Harry H., II, to Ruger Sturm & Co., Inc. Revolver cylinder retaining means. 3,685,193, Cl. 42-62.000.
Seguin, Pierre. Method and apparatus for use in the production of fancy yarns. 3,685,268, Cl. 57-34.00r.
Sehlbach, Herbert, K. G., Firma: *See*— Berns, Harald, 3,685,778.
Seiferth, Oscar E.; Austin, Glenn M.; and Gifford, Maurice J., to Mayer, Oscar, & Company, Inc. Two-compartment semi-rigid transparent package. 3,685,717, Cl. 229-2.500.
Seiko Seiki Kabushiki Kaisha: *See*— Nemoto, Kenji, 3,685,111.
Seitz, Georg: *See*— Unger, Richard; Seitz, Georg; Klockow, Michael; and Mehrhof, Werner, 3,686,164.
Sekera, Jaroslav, to Paillard S.A. Variable-format cinematographic apparatus. 3,685,890, Cl. 352-79.000.
Selegny, Eric: *See*— Korngold, Emmanuel; and Selegny, Eric, 3,686,089.
Selifanova, Evdokia Prokofievna: *See*— Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.
Sello, Stephen B.: *See*— Orosian, Andrew; Sello, Stephen B.; and Tesoro, Giuliana C., 3,686,258.
Seltzer, Raymond: *See*— Considine, William J.; and Seltzer, Raymond, 3,686,196.
Selwitz, Charles M.: *See*— Bacha, John D.; and Selwitz, Charles M., 3,686,314.
Semrow, Robert A.: *See*— Dube, Milford J.; and Semrow, Robert A., 3,686,514.
Seng, Florin: *See*— Ley, Kurt; Eholzer, Ulrich; and Seng, Florin, 3,686,181.
Seng, Florin, to Farbenfabriken Bayer Aktiengesellschaft. Pharmaceutical compositions containing and methods of using -2-amino-3-carbamido quinoxaline-di-N-oxides. 3,686,400, Cl. 424-250.000.
Sensi, Piero: *See*— Maggi, Nicola; and Sensi, Piero, 3,686,166.
Sequeira, Robert M., to Shell Oil Company. Block copolymer compositions. 3,686,365, Cl. 260-876.00b.
Service (Engineers) Limited: *See*— Bradshaw, Arthur; and Podmore, Dennis, 3,685,940.
Severino, Regina. Adhesively attached slide fastener and tape assembly. 3,685,103, Cl. 24-205.160.
Sew Fit Co.: *See*— Oblander, Ruth, 3,685,155.
Sexton, Charles W., Jr., to General Electric Company. Temperature compensation means for electronic circuit. 3,686,517, Cl. 307-310.000.
Shaffer, Jasper Dean. Snow architecture scoop. 3,685,942, Cl. 425-276.000.
Shapiro, David I.: *See*— Massover, Hyman A., deceased; and Shapiro, David I., 3,686,660.
Shapland, James T.; and United States Steel Corporation, to Sliding-gate closure for bottom-pour vessel. . 3,685,707, Cl. 222-559.000.
Sharp, Allen B.; and Hull, Richard A. Machine and method for removing engines from vehicles. 3,685,128, Cl. 29-403.000.
Sharpe, John C.: *See*— Frick, Roy C.; Calvin, Victor E.; Sharpe, John C.; and Rowe, William Wallace, 3,686,054.
Sharpless, Graham Trevor, to U.S. Philips Corporation. Glow discharge matrix display with improved addressing means. 3,686,661, Cl. 340-324.00r.
Sheets, Ronald E., to Tamarack Scientific Company, Inc. Jet pinched plasma arc lamp and method of forming plasma arc. 3,686,528, Cl. 315-111.000.
Sheldon, E. H., and Company: *See*— Berry, Hammond A., 3,685,851.
Shell Oil Company: *See*— Bauer, Ronald; Chung, Harold; Barnett, Kenneth W.; Glockner, Peter W.; and Keim, Wilhelm, 3,686,159.
Christensen, Alton O., 3,686,644.
De Vries, Douwe, 3,685,580.
Gatti, Anthony R., 3,686,137.
Kiovsky, Thomas E.; and Petzny, Wilfried J., 3,685,962.
Mason, Ronald F., 3,686,351.
Richardson, Edwin A., 3,685,582.
Sequeira, Robert M., 3,686,365.
Simon, Theodore A., 3,685,133.
Winkler, Deloss E., 3,686,366.
Wise, Harold L., 3,685,345.
Shepherd, John Michael: *See*— Greenwood, Robert; and Shepherd, John Michael, 3,685,272.
Shepherd, Thomas L., to Air Reduction Company, Inc. Rocket burner with flame pattern control. 3,685,740, Cl. 239-400.000.
Sherlock, Margaret H., to Schering Corporation. Process for alleviating pain. 3,686,406, Cl. 424-266.000.
Sherrill, Joseph H., to Reynolds, R. J., Tobacco Company. Filter construction and method of forming same. 3,685,527, Cl. 131-10.500.
Sherwin-Williams Company, The: *See*— Cunningham, Arthur L., 3,686,360.
Sherwood, John C., to Walls, Sher, Inc. Operable wall panel. 3,685,223, Cl. 52-64.000.
Shilipetar, George: *See*— Tenckhoff, Heinrich A. M.; and Shilipetar, George, 3,685,680.
Shimadzu Seisakusho Ltd.: *See*— Kita, Yasuo; and Hayashi, Tadao, 3,685,537.
Shimizu, Akihiko: *See*— Sakomura, Toshio; Shimizu, Akihiko; and Mori, Tadahiro, 3,686,261.
Shindo, Hiroshi: *See*— Nakano, Sohta; Fujimoto, Kazumitsu; Otomo, Kazuhiro; Yokota, Toshiyuki; and Shindo, Hiroshi, 3,686,002.
Shinevsky, Lev Konstantinovich: *See*— Usov, Vladimir Viktorovich; Zernograd Rostovskoi Oblasti; and Shinevsky, Lev Konstantinovich, 3,685,362.
Shinohara, Hiroshi: *See*— Masunaga, Kunihiko; and Shinohara, Hiroshi, 3,686,079.
Shinya, Seishi: *See*— Tamura, Masabi; Yoda, Masayuki; Shinya, Seishi; and Ayukawa, Yaichi, 3,686,144.

Shipman, Herbert C. Exhaust control for engines. 3,685,293, Cl. 60-229.000.
Shirn, George A.; and Lazott, James B., to Sprague Electric Company. Heated rear-view mirror. 3,686,473, Cl. 219-219.000.
Shoji, Masami, to Matsushita Electronics Corporation. Mechanical force-to-electric signal transducer having a rigid body pressing member. 3,686,545, Cl. 317-235.00r.
Shrewsbury, Robert M.; and Walcker, Jake J. Rotary engine. 3,685,498, Cl. 123-8.090.
Shuey, David R., to Xerox Corporation. Interrupted pulsing circuit for audible signaling. 3,686,666, Cl. 340-384.00e.
Sibley, John W.: *See—*
Fischer, John J.; and Sibley, John W., 3,685,805.
Sidorsky, Mikhail Andreevich: *See—*
Bezugly, Stanislav Leontievich; Sidorsky, Mikhail Andreevich; and Kutlyar, Vladimir Petrovich, 3,686,559.
Sieber, Adolf, to Sulzer Brothers, Ltd. Irradiation apparatus with a rotary lock and with cams to move objects to be irradiated. 3,686,502, Cl. 250-52.000.
Siegal, Burton L.: *See—*
Varon, Albert S.; and Siegal, Burton L., 3,685,662.
Siegmann, Robert L., to Brothers' Metal Products, Inc. Produce slicing apparatus. 3,685,560, Cl. 146-124.000.
Siemens Aktiengesellschaft: *See—*
Dietze, Wolfgang, 3,686,378.
Keller, Wolfgang; and Reuschel, Konrad, 3,685,973.
Kroos, Friedrich-Karl, 3,686,512.
Schlichte, Max, 3,686,442.
Wahl, Hermann, 3,686,584.
Sigmund, Franck, to Industriele Onderneming Waving N.V. Thermally insulated pipe. 3,685,546, Cl. 138-141.000.
Silver Industries, Inc.: *See—*
Cheney, Paul E., 3,685,514.
Silvestri, Michael A., to Sun Chemical Corporation. Process for the preparation of phosphoryl triamide. 3,685,974, Cl. 23-357.0on.
Simmons, Patricia L., to P & L Sales Incorporated. Contoured curler pad. 3,685,524, Cl. 132-9.000.
Simon Carves Limited: *See—*
Fitton, John Talbot; and Sutton, Alan, 3,685,166.
Simon, Theodore A., to Shell Oil Company. Method of connecting a hose between stations. 3,685,133, Cl. 29-427.000.
Simons, Emil: *See—*
Domres, Hans Georg; Simons, Emil; and Gillhaus, Horst, 3,685,573.
Sindelar, Ernest C., to Pines Engineering Co., Inc. Bending machine. 3,685,334, Cl. 72-311.000.
Singer Company, The, mesne: *See—*
Ebeling, William C., 3,686,435.
Sinn, Gustav: *See—*
Keberle, Wolfgang; Hornig, Heinz; and Sinn, Gustav, 3,686,387.
Sitelines, Inc.: *See—*
McCurdy, Richard H.; and Connelly, Lawrence W., 3,685,239.
Siwersson, Olle Lennart; and Tell, Karl Gunnar. Devices for guiding material to the entrance end of a screw conveyor having a rotatable screw and a conduit therefor. 3,685,638, Cl. 198-213.000.
Skalski, Stephen, III: *See—*
Logan, William A.; Holmes, Richard M.; Denny, William M.; Mahon, Michael J.; Skalski, Stephen, III; Henige, Gerald L.; and Bedekar, Shreekant, 3,686,641.
Skau, Evald L.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,686,242.
SKF Kugellagerfabriken GmbH: *See—*
Bartling, Gerhard, 3,685,270.
Sliding-gate closure for bottom-pour vessel: *See—*
Shapland, James T.; and United States Steel Corporation, 3,685,707.
Slockett, Robert Donald, to Du Pont de Nemours, E. I., and Company. Purification process for dimethyl terephthalate. 3,686,276, Cl. 260-475.00b.
Slonaker, Robert O.: *See—*
Hansen, James H.; Leedy, Nelson J.; and Slonaker, Robert O., 3,685,978.
Slone, Samuel: *See—*
Farman, Charles E.; Green, Thomas C.; Pepper, Hurley D.; and Slone, Samuel, 3,686,115.
Slumberland Group Limited: *See—*
Pearson, George H., 3,685,062.
Smart, Lee W.: *See—*
Gordon, Dale I.; and Smart, Lee W., 3,686,523.
Smeets, Alfred, to Citrex, S.A. Bleaching and softening agent. 3,686,126, Cl. 252-99.000.
Smith, Charles N., to Insect-I-Var Corporation. Insect attracting and destroying device. 3,685,198, Cl. 43-112.000.
Smith, Douglas D.: *See—*
Brower, Jerome S.; and Smith, Douglas D., 3,686,448.
Smith, Herchel: *See—*
Buzby, George C., Jr.; Walk, Charles R.; and Smith, Herchel, 3,686,317.
Smith, James Arthur. Machine tools. 3,685,394, Cl. 90-89.000.
Smith, James E.; and Borgogno, Victor F., to Ainsworth, Wm., Inc. Balanced mass-moment balance beam with electrically conductive pivots. 3,685,604, Cl. 177-184.000.
Smith, Joseph B.; and Gardner, Ronald D., to Pipe Line Development Co. Pipe repair system. 3,685,545, Cl. 138-99.000.
Smith Kline & French Laboratories: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,686,335.
Loev, Bernard, 3,686,165.
Sutton, Blaine M., 3,686,180.
Smith, Leonard, R. D.: *See—*
Cannon, Richard L.; and Smith, Leonard, R. D., 3,685,383.
Smithkey, John C., Jr., to Goodyear Tire & Rubber Company, The. Pneumatic tire. 3,685,564, Cl. 152-356.000.
Smiyama, Shinichi: *See—*
Ito, Yoshio; Smiyama, Shinichi; Toyoda, Akinobu; and Minami, Shoichitro, 3,686,294.
Smolka, Thomas G.; and Schweizer, Gottfried, to Wiener Metallwarenfabrik Smolka & Co. Tension control for ski bindings. 3,685,847, Cl. 280-11.35t.
Snodgrass, Kenneth William; Steele, William Henry; Wilson, Alan; and Phelps, Ross Leslie, to Victa Limited. Mufflers for internal combustion engines. 3,685,613, Cl. 181-33.00k.
Snyder, Harlan K., Jr., to Chicago Display Company. Display device. 3,685,184, Cl. 40-125.00h.
Sobieski, John C., to General Electric Company. Manufacture of lamps of the compact arc discharge type. 3,685,880, Cl. 316-19.000.
Societa Farmaceutici Italia: *See—*
Arcamone, Federico; Cassinelli, Giuseppe; Penco, Sergio; and Tognoli, Luigi, 3,686,163.
Societa Italiana Resine S.p.A.: *See—*
Gualdi, Giorgio; Lugo, Luigi; and Reni, Cesare, 3,686,293.
Societe Anonyme Automobiles Citroen: *See—*
Cadiou, Jean-Georges, 3,685,854.
Societe Anonyme dite: Orsymonde: *See—*
Lafon, Louis, 3,686,271.
Societe d'Etudes de Machines Specials: *See—*
Chambon, Louis Jean, 3,685,823.
Societe d'Etudes Verrieres Appliquees "S.E.V.A.": *See—*
Lagoutte, Serge, 3,685,938.
Societe dite: Compagnie Industrielle des Bracelet C.I.B. (Societe Anonyme): *See—*
Epiard, Eugene Jean Robert, 3,685,107.
Societe en Nom Collectif Science Union et Cie, Societe Francaise de Recherche Medicale: *See—*
Malen, Charles; Danree, Bernard; and Poscaud, Xavier, 3,686,190.
Societe Lannionaise d'Electronique: *See—*
Garnier, Michel; and Bigou, Jacques, 3,686,533.
Societe Lannionnaise d'Electronique: *See—*
Renoulin, Roger, 3,686,657.
Societe Nationale des Petroles d'Aquitaine Tour: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.
Societe ORSYMONDE: *See—*
Lafon, Louis, 3,686,319.
Societe Trefimetaux G.P.: *See—*
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weisz, Michel, 3,685,988.
Sola Basic Industries, Inc.: *See—*
Kroeger, James K., 3,686,440.
Soldatos, Anthon C.; and Burhans, Allson S., to Unon Carbde Corporaton. Curable polepoxide compositons. 3,686,359, Cl. 260-836.000.
Solomka, Monroe M.; and Montoya, Jose M. Genua, to Dow-Unquinesa S.A. Process for the manufacture of titanium dioxide pigment having high specific resistance. 3,686,010, Cl. 106-300.000.
Somjak, John R.: *See—*
Buchesky, David M.; and Somjak, John R., 3,685,812.
Sommerkorn, Gernot: *See—*
Bottcher, Wolfgang; Kopineck, Hermann-Josef; Schlusnus, Karl-Heinz; and Sommerkorn, Gernot, 3,685,348.
Sonnberger, Hanfried, to Rohde & Schwarz. High frequency switch. 3,686,455, Cl. 200-153.00s.
Sony Corporation: *See—*
Matsuhita, Takeshi; and Yagi, Hajime, 3,686,684.
Naruse, Yohsuke; Ashiya, Ryosuke; Nii, Takehiko; and Fuse, Yuzo, 3,686,525.
Sorenson, Billy L.; and Strang, Elmer J., to Coats Company, Inc., The. Adapter for tire changing stand. 3,685,565, Cl. 157-1.240.
Sorenson, James L.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,685,517.
Southeastern Products, Inc., mesne: *See—*
Lee, Charles A., 3,686,021.
Spahn, Walter. Partition wall seal between the feed and discharge tubes of a column plate. 3,686,075, Cl. 202-158.000.
Spain, Byron: *See—*
Sullivan, Charles E., 3,685,538.
Spangemacher, Kurt, to Maschinenbau-Aktiengesellschaft Balcke. Cooling tower system. 3,685,579, Cl. 165-122.000.
Spanjer, Keith Gordon, to Motorola, Inc. Injection mold wherein moveable cavity portions are to close the mold gates and further compress the mold material. 3,685,784, Cl. 249-110.000.
Speck, Walter: *See—*
Speck, Willi; and Speck, Walter, 3,685,919.
Speck, Willi; and Speck, Walter, to Speck-pumpen Daniel Speck & Soehne. Circulating pump. 3,685,919, Cl. 415-53.000.
Speck-pumpen Daniel Speck & Soehne: *See—*
Speck, Willi; and Speck, Walter, 3,685,919.
Speedcranes Limited: *See—*
Morrison, Robert, 3,685,669.

Spencer, Gary E.: *See—*
Hutchins, Everett C.; Spencer, Gary E.; and Tucker, Marion K., 3,685,923.
Spencer Turbine Company, The: *See—*
Bailey, William B., 3,685,530.
Spescha, Gelli Anton: *See—*
Lamparter, Hansruedi; and Spescha, Gelli Anton, 3,686,460.
Spilhaug, Tor W., to A/S Kiaettingfabriken. Shackles or clevises for chains or the like. 3,685,285, Cl. 59-86.000.
Spinner, Georg; and Treczka, Leo. Waveguide transition. 3,686,589, Cl. 333-21.00r.
Spinner, Georg. Waveguide transition member. 3,686,595, Cl. 333-98.00r.
Spivak, Boris Volkovich: *See—*
Konovalov, Boris Leonidovich; Glider, Evgeny Khaimovich; Chigirinsky, Alexandr Abramovich; Gradov, Oleg Borisovich; Karpman, David Bentxionovich; and Spivak, Boris Volkovich, 3,686,522.
Sprague Electric Company: *See—*
Shirn, George A.; and Lazott, James B., 3,686,473.
Spraymould Limited: *See—*
Dicks, Peter D. J.; and Hill, William M., 3,685,071.
Spreadbury, Robert J., to Westinghouse Electric Corporation. Regulating and filtering transformer having a magnetic core constructed to facilitate adjustment of non-magnetic gaps therein. 3,686,561, Cl. 323-6.000.
Sprouse, Jack E.: *See—*
Blackett, Frank E.; and Sprouse, Jack E., 3,686,058.
Spurney, Robert V. Indirect ophthalmoscope. 3,685,887, Cl. 351-6.000.
Square D Company: *See—*
Anger, Ernest G.; Richards, Giles J.; Bloodgood, John F.; and Geiger, Roy J., 3,686,556.
Srode, Walter E., Jr.: *See—*
Zachar, James E.; and Srode, Walter E., Jr., 3,686,637.
Staedtler & Uhl Schwabach: *See—*
Egerer, Josef, 3,685,101.
Stahlberg, Eugene G.; Tagawa, James M.; and Tiao, Hui-Li, to International Business Machines Corporation. Two shell magnetic tape cartridge. 3,686,470, Cl. 179-100.20z.
Stamicarbon N. V.: *See—*
De Koning, Hendrik, 3,686,077.
Groen, Siemen H.; and Deumens, Johannes J. M., 3,686,262.
Stamicarbon N.V.: *See—*
Duyverman, Coenraad J., 3,686,333.
Standard Oil Company: *See—*
Greene, Janice L.; and Clark, Rosalind E., 3,686,307.
Standard Oil Company, (Indiana): *See—*
Phillips, James A., 3,685,685.
Standard Oil Company, The: *See—*
Grasselli, Robert K.; and Miller, Robert C., 3,686,295.
Vis, Jan H.; and Loder, Wallace R., Jr., 3,685,976.
Stange, Klaus K., to Xerox Corporation. Multi-stylus recording assembly. 3,686,679, Cl. 346-139.00a.
Stannebein, Clifford E., to Case, J. J., Company. Seat suspension system. 3,685,780, Cl. 248-399.000.
Stanray Corporation: *See—*
Sanders, Wes E.; and Allen, John W., 3,685,093.
Stansfield, Manfred D., to Sterling Extruder Corporation. Mixing apparatus and method. 3,685,804, Cl. 259-10.000.
Stanton Magnetics, Inc.: *See—*
Pauly, Walter W., 3,686,511.
Stauffer Chemical Company: *See—*
Bernhart, Donald N., 3,686,329.
Coll-Palagos, Miguel, 3,686,020.
Yu, Arthur J.; and Kraft, Paul, 3,686,363.
Steele, John K.: *See—*
Steele, Vincent J., Jr.; and Steele, John K., 3,685,460.
Steele, Vincent J., Jr.; and Steele, John K. Pallet prop. 3,685,460, Cl. 108-51.000.
Steele, William Henry: *See—*
Snodgrass, Kenneth William; Steele, William Henry; Wilson, Alan; and Phelps, Ross Leslie, 3,685,613.
Stefani, Giancarlo: *See—*
Vecchio, Martino; and Stefani, Giancarlo, 3,686,338.
Steffen, Vincent B. Method of erecting a grain bin. 3,685,232, Cl. 52-742.000.
Stegenga, Jerry A., to Milgo Corporation. Pen actuating mechanism for graphical display plotter. 3,686,681, Cl. 346-141.000.
Stehlin, Theodore A., to Hoffman, Helen B. Water treatment apparatus. 3,686,092, Cl. 204-197.000.
Steigman, Peter Edward; Badcock, Frank Robert; and Lamb, David Robert, to U.S. Philips Corporation. MOSFET with dual dielectric of TiO_2 or SiO_2 to prevent surface current migration path. 3,686,544, Cl. 317-235.00r.
Stein, John L.: *See—*
Martin, Daniel W.; and Stein, John L., 3,685,384.
Stendel, Wilhelm: *See—*
Wollweber, Hartmund; Hiltmann, Rudolf; and Stendel, Wilhelm, 3,686,199.
Stephan, Wolfgang, to Biotest Serum Institut GmbH. Process for preparation of storage stable hepatitis-free serum. 3,686,395, Cl. 424-101.000.
Stephen William Tonkin, to British Aircraft Corporation, Limited. Dampers for spinning bodies. 3,685,770, Cl. 315-1.0sa.
Sterling Drug, Inc.: *See—*
Bailey, Denis M., 3,686,184.
Diddams, Donald Guy; and Renaud, Norman Ernest, 3,686,322.
Miller, Theodore C., 3,686,223.
Sterling Extruder Corporation: *See—*
Stansfield, Manfred D., 3,685,804.
Sternbach, Leo Henryk: *See—*
Ning, Robert Ye-Fong; and Sternbach, Leo Henryk, 3,686,308.
Steude, Heinrich: *See—*
Schliebs, Reinhard; Brandt, Hans-Walther; Engelhard, Bruno; Steude, Heinrich; Scherb, Helmut; and Schnuchel, Gunther, 3,686,349.
Stevens, J. P., & Co., Inc.: *See—*
Oroslan, Andrew; Sello, Stephen B.; and Tesoro, Giuliana C., 3,686,258.
Stevenson, Moses: *See—*
Davis, William; and Stevenson, Moses, 3,685,627.
Stevenson, Robert Andrew: *See—*
Barnaby, Bernard Sydney; Webb, Graham; and Stevenson, Robert Andrew, 3,686,445.
Stevenson, Robert Andrew. Telephone instruments. 3,686,444, Cl. 179-81.00b.
Stibbard, Frank C. Fish lure. 3,685,192, Cl. 43-42.040.
Stiefel, Werner, to Sulzer Brothers Ltd. Steam boiler having a water space traversed by a flue gas duct. 3,685,496, Cl. 122-140.00r.
Stievenart, Emile Frans; Mees, Omer Jan; and Verelst, Johan Lodewijk, to Gevaert-Agfa N.V. Transfer apparatus. 3,685,420, Cl. 95-89.00l.
Stingl, Hans Alfred, to Toms River Chemical Corporation. Process for dyeing polyester fibers with nitrodiphenylamine dyestuff. 3,685,957, Cl. 8-179.000.
Stoeck, Georg: *See—*
Lauer, Karl; Budka, Heinz-Gunter; and Stoeck, Georg, 3,686,117.
Stokes, Robert G.: *See—*
Marshall, George E.; Perno, Bartholomew J.; and Stokes, Robert G., 3,685,905.
Stone, Henry Asaph, III: *See—*
Gambale, James Richard; and Stone, Henry Asaph, III, 3,685,218.
Stone, Jonathan A.: *See—*
Tideswell, Richard B.; and Stone, Jonathan A., 3,686,106.
Stone, Obed W. Machine for killing insects. 3,685,431, Cl. 99-253.000.
Stoudt, Thomas H.: *See—*
Woodruff, Harold Boyd; and Stoudt, Thomas H., 3,686,393.
Stover, Raymond W., to Xerox Corporation. Xerographic development. 3,685,488, Cl. 118-637.000.
Straitz, John F., III, to Combustion Unlimited, Incorporated. Vent seals for smoke stack. 3,685,534, Cl. 137-171.000.
Strang, Elmer J.: *See—*
Sorenson, Billy L.; and Strang, Elmer J., 3,685,565.
Straub, Bruno E.; and Grotewold, William H., to Cincinnati Melacron-Heald Corporation. Control system for a hydraulic motor. 3,685,395, Cl. 91-216.00b.
Strauss, Levi, & Co.: *See—*
Michaels, Sid, 3,685,179.
Stromberg-Carlson Corporation: *See—*
Kavanaugh, Paul K.; and Boehly, Michael A., 3,686,443.
Stuart, Ronald Stiles; and Wasson, Burton Kendall, to Frosst, Charles E., & Co. 1-Morpholino phenoxy-3-alkylamino-2-propanols. 3,686,176, Cl. 260-247.50r.
Stubiger, Ernst: *See—*
Frohlich, Alfons; Cappel, Marie-Luise; and Stubiger, Ernst, 3,685,474.
Stummeyer, Herbert: *See—*
Sanne, Walter; Koenig, Karl-Heinz; Pommer, Ernst-Heinrich; and Stummeyer, Herbert, 3,686,399.
Sturm, Hans Juergen: *See—*
Schecker, Hans-Georg; Koehler, Waldemar; Armbrust, Herbert; Sturm, Hans Juergen; and Kilpper, Gerhard, 3,686,339.
Suchy, Milos: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,686,222.
Suda, Tetuo: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Odaka, Takashi; and Suda, Tetuo, 3,685,929.
Sullivan, Charles E., 30% to Spain, Byron and 65% to Holman, Rober S. Fluid flow control device. 3,685,538, Cl. 137-504.000.
Sulzer Brothers, Ltd.: *See—*
Frei, Arno, 3,685,839.
Sieber, Adolf, 3,686,502.
Stiefel, Werner, 3,685,496.
Sumitomo Chemical Co. Ltd.: *See—*
Sagawa, Seiji; Kunihiro, Haruo; Kimura, Osamu; Numata, Kenichiro; and Inoue, Masatoshi, 3,686,132.
Summers, James E.: *See—*
Turner, Lyman H.; Kukucka, William P.; and Summers, James E., 3,685,712.
Sun Chemical Corporation: *See—*
Silvestri, Michael A., 3,685,974.
Sun Oil Company: *See—*
Oberdorfer, Paul E., Jr., 3,685,502.
Sunbeam Plastics Corporation: *See—*
Gach, Peter P.; and Leonard, Henry K., 3,685,676.
Sundberg, Nils O. Self-loading power driven transporting vehicles. 3,685,675, Cl. 214-501.000.
Sunstrand-Engelberg, Inc.: *See—*

Schaller, Robert L., 3,685,212.
Surbrook, Louis M., to Linotype and Machinery Limited. Printing press folders. 3,685,820, Cl. 270-76.000.
Suter, Hubert: *See—*
Poehler, Guenter; Suter, Hubert; Wirth, Friedrich; and Walter, Johann Heinrich, 3,686,229.
Sutton, Alan: *See—*
Fitton, John Talbot; and Sutton, Alan, 3,685,166.
Sutton, Blaine M., to Smith Kline & French Laboratories. Substituted 9-lower alkylacridine-4-carboxylic acids. 3,686,180, Cl. 260-279.00r.
Suvanto, Erkki: *See—*
Fredrikson, Bengt; Larsen, Stein; and Suvanto, Erkki, 3,685,570.
Suverkrop, Don, to Hopper, Inc. Convertible level luffing crane. 3,685,668, Cl. 212-8.00a.
Suzuki, Susumu: *See—*
Kawada Tsukasa; Suzuki, Susumu; and Matsui, Nobuya, 3,686,240.
Suzuki, Takao: *See—*
Matsumaga, Kenji; Horiuchi, Michio; and Suzuki, Takao, 3,685,413.
Suzuki, Takashi: *See—*
Takeda, Ikuo; Suzuki, Takashi; and Furukawa, Hikaru, 3,686,581.
SW Industries, Inc.: *See—*
Mitchell, Paul J., Jr., 3,685,436.
Swett, Leo Ralph; Ratajczyk, James Daniel; and Young, Patrick Richard, to Abbott Laboratories. N'-[4-formyl]-5-amido pyrazoles. 3,686,171, Cl. 260-240.00g.
Sy, Jose C., to Audio Devices, Inc. Tape reel container. 3,685,646, Cl. 206-65.00k.
Sykes, Alfred Ernest. Workpiece holders. 3,685,844, Cl. 279-4.000.
Synalloy Corporation: *See—*
Carpenter, William T., 3,685,325.
Synergistc Systems, Inc.: *See—*
Naylor, John J., 3,686,494.
Syntex Corporation: *See—*
Dyson, Norman H., 3,686,183.
Henrick, Clive A.; Edwards, John A.; and Fried, John H., 3,686,215.
Zaffaroni, Alejandro, 3,686,238.
Syre, Robert: *See—*
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weisz, Michel, 3,685,988.
Syrovataka, Rudolf: *See—*
Boldingh, Jan; Heslinga, Lammert; Schmidl, Ernst; and Syrovataka, Rudolf, 3,686,127.
Syversen, James. License plate security locking device. 3,685,188, Cl. 40-201.000.
Szumilas, Wladislaw; Adam, Macedon Emil; Lata, Ilie; and Muresan, Gheorghe, to Vzina Mecanica de Gaz Matana Medias. Plug-type valve with lost-motion actuator. 3,685,793, Cl. 251-164.000.
Tabata, Norikazu: *See—*
Nomaguchi, Tamotsu; Tabata, Norikazu; and Ito, Toshio, 3,685,950.
Taber, David; and Zakaria, Moneeb H., to Armour and Company. N-acyl-N'-(halogenated aryl) ureas as antibacterial agents. 3,686,418, Cl. 424-322.000.
Tagawa, James M.: *See—*
Stahlberg, Eugene G.; Tagawa, James M.; and Tiao, Hui-Li, 3,686,470.
Taglieber, Kurt: *See—*
Brunner, Erwin; Platz, Rolf; Taglieber, Kurt; and Weinfurter, Kurt, 3,686,344.
Tago, Kazuo: *See—*
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, 3,686,350.
Taguchi, Kikuo: *See—*
Kawamura, Toshiki; Ohneda, Tohru; Nomura, Yasuaki; and Taguchi, Kikuo, 3,685,725.
Takahashi, Nobuaki, to Victor Company of Japan. System for recording and/or reproducing four channel signals on a record disc. 3,686,471, Cl. 179-100.4st.
Takalo, Kauko Armas. Remote controlled miniature-vehicle. 3,686,447, Cl. 191-2.000.
Takanashi, Michinobu. Drainer. 3,685,298, Cl. 61-11.000.
Takashashi, Yoshinori; Sasaki, Rokuro; Watanabe, Kikuo; and Takizawa, Masau, to Hitachi, Ltd. Floor selector for an elevator car. 3,685,618, Cl. 187-29.00r.
Takeda Chemical Industries, Ltd.: *See—*
Fujimura, Hajime; Hori, Mikio; Masuda, Toru; Sawa, Yoichi; and Kato, Takeshi, 3,686,167.
Hamada, Yoshio; and Yoshino, Motohisa, 3,686,392.
Takeda, Ikuo; Suzuki, Takashi; and Furukawa, Hikaru. Electric signal amplifying apparatus. 3,686,581, Cl. 330-63.000.
Takenaka, Toshio: *See—*
Early, James R.; Eyring, William M.; McGrath, Donald W.; and Takenaka, Toshio, 3,685,139.
Takimoto, Masaaki: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Takizawa, Haruki; and Fujita, Masakazu, to Teiyin Limited. Device for preventing the unwinding of undrawn yarn in drawing machine for synthetic filament yarn. 3,685,765, Cl. 242-147.
Takizawa, Masau: *See—*
Takashashi, Yoshinori; Sasaki, Rokuro; Watanabe, Kikuo; and Takizawa, Masau, 3,685,618.
Takokoro, Tomoo: *See—*
Tatsutomi, Yasuo; and Takokoro, Tomoo, 3,685,295.
Talento, Joseph L., to General Electric Company. Contact structure for an electric circuit breaker. 3,686,456, Cl. 200-166.00c.
Tamai, Yasuo: *See—*
Sato, Masamichi; Fukushima, Osamu; Miyazuka, Hajime; Takimoto, Masaaki; Matsumoto, Seiji; Tamai, Yasuo; and Honjo, Satoru, 3,685,907.
Tamarack Scientific Company, Inc.: *See—*
Sheets, Ronald E., 3,686,528.
Tamer, Ergun; Hendricks, Udo; and Quaedvlieg, Mathieu. Increasing dyestuff affinity of natural polyamides by adding water-soluble polyamines to aqueous bath. 3,685,951, Cl. 8-31.000.
Tamura, Hifumi: *See—*
Omura, Itiro; Kondo, Toshio; and Tamura, Hifumi, 3,686,499.
Tamura, Masabi; Yoda, Masayuki; Shinya, Seishi; and Ayukawa, Yaichi, to CPC International Inc., mesne. Recovery of yeast proteins in refined form and with high yield by dehydration with an alkanol followed by acidic esterification. 3,686,144, Cl. 260-112.0r.
Tan, Tjhing Thian: *See—*
Rudolph, Rene; and Tan, Tjhing Thian, 3,686,532.
Tatsutomi, Yasuo; and Takokoro, Tomoo, to Toyo Kogyo Company Limited. Control system for purifying exhaust gas of an internal combustion engine. 3,685,295, Cl. 60-290.000.
Taubman, Arkady Borisovich: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.
Taubner, Valentine J., Jr. Flexible, linked jewelry beads. 3,685,284, Cl. 59-80.000.
Taylor, Keith M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,686,267, Cl. 260-465.300.
Taylor, Lloyd D.: *See—*
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,685,991.
Taylor, Norman J.; Mann, Joseph K.; and Atwood, Allen W., to Varian Associates. Charged particle analyzer with means to determine the coordinate position of the sample. 3,686,501, Cl. 250-49.5ae.
Technoscience Systems, Inc.: *See—*
Bodai, Conrad A., 3,685,808.
Teijin Limited: *See—*
Goto, Hachiro, 3,686,146.
Teiyin Limited: *See—*
Takizawa, Haruki; and Fujita, Masakazu, 3,685,765.
Tektronix, Inc.: *See—*
Saul, Ivar, 3,685,424.
Teledyne Industries, Inc.: *See—*
Wilt, Marvin D., 3,686,658.
Telefunken Patentverwertungsgesellschaft m.b.H: *See—*
Gereth, Reinhard; and Fischer, Horst, 3,686,036.
Tell, Karl Gunnar: *See—*
Siwersson, Olle Lennart; and Tell, Karl Gunnar, 3,685,638.
Tellier, Jacques: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,686,265.
Tenckhoff, Heinrich A. M.; and Shilipetar, George, to Battelle Development Corporation, The, mesne. Peritoneal dialysis delivery unit using home-prepared dialysate. 3,685,680, Cl. 270-27.000.
Tenneco Chemicals, Inc.: *See—*
Fischer, Alfred; and Fraser, Irene A. E., 3,686,012.
Tenneco Inc.: *See—*
Malkiewicz, Wladyslaw F., 3,685,616.
Rutt, Paul A., 3,685,615.
Teodorescu, Constantin: *See—*
Coanda, Henri; and Teodorescu, Constantin, 3,685,614.
Terterian, Aram Aristagesovich: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, Anatolylvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.
Tesoro, Giuliana C.: *See—*
Oroslan, Andrew; Sello, Stephen B.; and Tesoro, Giuliana C., 3,686,258.
Texaco Inc.: *See—*
Bigdon, Orville W.; Edwards, Robert S.; and Powers, William J., III, 3,686,243.
Coons, William R., Jr.; Nelson, Gerald V.; and Wray, Glenn C., 3,686,095.
Hess, Howard V.; and Guptill, Frank E., Jr., 3,685,581.
Mott, George E.; and Ziober, Johnnie J., 3,685,300.
Mott, George E., 3,685,306.
Van Stavern, Merle H.; Moorer, Henry D.; Miller, Gordon H.; and Gunn, Kenneth M., 3,685,653.
Woodle, Robert Alan, 3,686,488.
Texas Instruments, Incorporated: *See—*
Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., 3,686,457.
Goodman, Robert C., 3,685,977.
Textron Inc.: *See—*

Carlile, Alfred E.; and Cox, Bernard H., 3,685,105.
Doerter, Randall H., 3,685,130.
Gapp, Roland Howard; Alazraki, Marcos; and Harper, John, 3,685,391.
Reynolds, Rolfe E., 3,685,471.
Vannest, James L., 3,685,114.

Textron Inc., mesne: *See—*
Wright, John G.; and Chafin, James M., 3,685,815.

Teza, James E.: *See—*
Moser, Gene W.; Cox, Robert A.; and Teza, James E., 3,686,429.

Thatcher, Robert H. Sunglasses having adjustable lenses. 3,685,889, Cl. 351-47.000.

Thayer, Victor R. Production of heavy water. 3,685,966, Cl. 423-580.0on.

Thayer, Victor R. Process and apparatus for concentrating isotope by the simultaneous exchange of heat and mass. 3,685,967, Cl. 423-580.0on.

The H-2-O Filter Corporation: *See—*
Dock, Mortimer Russell, 3,685,521.

Theimer, Ernst T.: *See—*
Pittet, Alan O.; Mason, Michael E.; Theimer, Ernst T.; and Tibbetts, Merrick S., 3,686,177.

Theiss, Armin: *See—*
Butter, Karl; Wittich, Willibald; and Theiss, Armin, 3,686,081.

Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,685,456.
Plasser, Franz; Theurer, Josef; and Folser, Karl, 3,685,589.

Thiele, Kurt: *See—*
Posselt, Klaus; and Thiele, Kurt, 3,686,206.

Thiokol Chemical Corporation: *See—*
Rich, Blaine B.; and Brown, Rex M., 3,685,404.

Thoma, Frederic A., to De Laval Turbine Inc. Bearing system for minimizing shaft tilting. 3,685,368, Cl. 74-410.000.

Thoma, Paul E., to Johnson Service Company. Electrical humidity sensing element. 3,686,606, Cl. 338-35.000.

Thomas, David M., to International Standard Electric Corporation. TDM fault detector. 3,686,441, Cl. 179-15.0bf.

Thomas Industries, Inc.: *See—*
Durkee, John E., 3,686,668.

Thomas, Michael Barrie: *See—*
Gadsby, Brian; Leeming, Peter Rodway; and Thomas, Michael Barrie, 3,686,291.

Thompson, Edwin P.: *See—*
Peck, Merrill V.; Thompson, Edwin P.; Thompson, William F.; and Peck, Robert M., 3,685,377.

Thompson, James E.: *See—*
Lyness, Warren I.; and Thompson, James E., 3,686,124.

Thompson, Morice William; and Walbridge, Derek John, to Imperial Chemical Industries Limited. Process for preparing a dispersion of polymer particles in an organic liquid. 3,686,114, Cl. 260-34.200.

Thompson, William F.: *See—*
Peck, Merrill V.; Thompson, Edwin P.; Thompson, William F.; and Peck, Robert M., 3,685,377.

Thomsen Jack W., to Bell & Howell Company. Web handling apparatus. 3,685,766, Cl. 242-192.000.

Three-Line Research and Developments Company, Inc.: *See—*
Quinn, Governor V., 3,685,824.

Tiao, Hui-Li: *See—*
Stahlberg, Eugene G.; Tagawa, James M.; and Tiao, Hui-Li, 3,686,470.

Tibbetts, Merrick S.: *See—*
Pittet, Alan O.; Mason, Michael E.; Theimer, Ernst T.; and Tibbetts, Merrick S., 3,686,177.

Tideswell, Richard B.; and Stone, Jonathan A., to Hooker Chemical Corporation. Room temperature curing foundry binder. 3,686,106, Cl. 260-19.00a.

Timken Company, The: *See—*
Keller, Thomas Charles, 3,685,841.

Timmer, Jacobus Maria: *See—*
Asberg, Sture; and Timmer, Jacobus Maria, 3,685,090.

Timreck, Albert E., to Pfizer Inc. Process for the manufacture of mono-alkali metal salts of α-carboxybenzylpenicillin. 3,686,168, Cl. 260-239.100.

Tizon Chemical Corporation: *See—*
Gambale, James Richard; and Stone, Henry Asaph, III, 3,685,218.

Tkach, Khaim Berkovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.

T.M.M. (Research) Limited: *See—*
Greenwood, Robert; and Shepherd, John Michael, 3,685,272.

Tognoli, Luigi: *See—*
Arcamone, Federico; Cassinelli, Giuseppe; Penco, Sergio; and Tognoli, Luigi, 3,686,163.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, 3,686,122.
Kitaoka, Kouichi; and Ichihara, Taku, 3,686,431.

Tolaas, William M., to Hoerner Waldorf Corporation. Display carton. 3,685,640, Cl. 206-44.110.

Tomasovich, Martin. Bin turning mixer. 3,685,361, Cl. 73-421.00b.

Toms River Chemical Corporation: *See—*
Stingl, Hans Alfred, 3,685,957.

Torazza, Giovanni, to Fiat Societa Per Azione. Fuel tank ventilation in motor vehicles. 3,685,504, Cl. 123-146.000.

Torelli, Vesperto: *See—*
Amiard, Gaston; Nomine, Gerard; and Torelli, Vesperto, 3,686,241.

Torello-Viera, Eugene, to Bancroft, Joseph & Sons Co. Small denier stuffer crimper and method. 3,685,109, Cl. 28-1.600.

Totten, Thomas Bernard; and Gordon, Robert Wilmer, to Treis Industries Limited. Lighting troffer. 3,686,496, Cl. 240-51.11r.

Toulis, William J. Detection and classification system utilizing unipolar pulses. 3,686,669, Cl. 343-55.00a.

Townsend Engineering Company: *See—*
Beasley, Donald L., 3,685,561.

Toyo Kogyo Company Limited: *See—*
Tatsutomi, Yasuo; and Takokoro, Tomoo, 3,685,295.

Toyo Soda Manufacturing Co., Ltd.: *See—*
Sakomura, Toshio; Shimizu, Akihiko; and Mori, Tadahiro, 3,686,261.
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, 3,686,350.

Toyoda, Akinobu: *See—*
Ito, Yoshio; Smiyama, Shinichi; Toyoda, Akinobu; and Minami, Shoichitro, 3,686,294.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hobo, Nobuhito; Natsume, Yoshimi; and Kaga, Sumihiro, 3,685,526.
Masunaga, Kunihiko; and Shinohara, Hiroshi, 3,686,079.

Transdynamics, Inc.: *See—*
Casani, John R.; and Pounder, Edwin, 3,685,478.
Pounder, Edwin; and Casani, John R., 3,685,352.

Trask, Arthur C., & Sons: *See—*
Jantzen, Leif, 3,686,161.

Treczka, Leo: *See—*
Spinner, Georg; and Treczka, Leo, 3,686,589.

Treis Industries Limited: *See—*
Totten, Thomas Bernard; and Gordon, Robert Wilmer, 3,686,496.

Treitler, Theodore Leo, to FMC Corporation. Purification of alkali phosphate solution. 3,685,964, Cl. 427-158.0on.

Trentini, Gianpietro: *See—*
Arav, Ronnie A.; and Trentini, Gianpietro, 3,686,386.

Tri-Tech, Inc.: *See—*
Haydon, Arthur W., 3,685,278.

Trimble, Cebern B., to National Cash Register Company, The. Method of a magnetic transducer. 3,685,144, Cl. 29-603.000.

Triox Company, The: *See—*
Atwater, Wayne G., 3,685,665.

Tripp, Robert W., to Inductosyn Corporation. Trigonometric signal generator and machine control. 3,686,487, Cl. 235-151.300.

Tronzo, Raymond G. Hip prosthesis. 3,685,058, Cl. 3-1.000.

TRW Inc.: *See—*
Sandera, Jiri, 3,685,141.

Tsentralny Nauchno-Issledovatelsky Institut Chernoi Metallurgii im. I.P. Bardina: *See—*
Rutes, Viktor Savelievich; Petrov, Vladimir Konstantinovich; Terterian, Aram Aristagesovich; Chigrinov, Mikhail Grigorievich; Ballad, Erik Rikhardovich; Gankin, Vtadimir Borisovich; Kolpakov, Serafim Vasilievich; Evgeev, Dmitry Petrovich; Manokhin, AnatolyIvanovich; Klimashin, Petr Sergeevich; Matevosian, Elene Pavlovna; Nosochenko, Oleg Vasilievich; and Lavrov, Alexandr Sergeevich, 3,685,986.

Tsuboi, Takashi: *See—*
Onoda, Yoshimitsu; and Tsuboi, Takashi, 3,686,548.

Tsuda, Momotoshi: *See—*
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, 3,685,995.

Tsuji, Tom T., to California Auto Radio, Inc. Radio apparatus with adjustably spaced control elements. 3,685,879, Cl. 312-245.000.

Tuck, Elizabeth Margaret: *See—*
Ogilvy, Harry Heggie; Tuck, Elizabeth Margaret; Dobbs, David John Miller; and Rosser, John Anthony, 3,685,454.

Tucker, Marion K.: *See—*
Hutchins, Everett C.; Spencer, Gary E.; and Tucker, Marion K., 3,685,923.

Tuji, Akitoshi: *See—*
Hattori, Kenichi; Yamakawa, Tyoji; and Tuji, Akitoshi, 3,686,133.

Tuppeny, William H., Jr., to Combustion Engineering, Inc. Internal configuration of pipes and pressure parts. 3,685,547, Cl. 138-178.000.

Turco, Aldo: *See—*
Albanese, Pietro; Benzoni, Luigi; Corain, Benedetto; and Turco, Aldo, 3,686,264.

Turecek, Joseph L.; Craig, Glenn D.; and Fueling, David T., to Aqua-Chem, Inc. Cam for control of combustion fuel-to-air ratio. 3,685,364, Cl. 74-55.000.

Turner, Alfred H.: *See—*
Wunsche, Edgar; Turner, Alfred H.; and Durdin, Lewis H., 3,686,421.

Turner, Lyman H.; Kukucka, William P.; and Summers, James E., to Xerox Corporation. Stapling apparatus. 3,685,712, Cl. 227-3.000.

Turzillo, Lee A. Means for stabilizing structural layer overlying earth materials in situ. 3,685,303, Cl. 61-63.000.

U. S. Engineering Company, Inc.: *See—*
Karsnak, George D., 3,685,341.

Uberbacher, Edward C., to International Business Machines Corporation. Multiacontact electrical connector assembly. 3,686,617, Cl. 339-49.00r.

UCB (Union Chimique-Chemische Bedrijven), S.A.: *See—*
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,269.
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,270.

Uchida, Yasuo: *See—*
Ohfuka, Toshio; Sato, Hideo; and Uchida, Yasuo, 3,686,019.

Ugine Kuhlmann: *See—*
Jobert, Raymond; and Vuchner, Bernard, 3,686,268.

Uhlig, Albert R., to Owens-Illinois, Inc. Displacement molding plastic articles. 3,685,941, Cl. 425-245.000.

Uhlmann, Josef, Maschinenfabrik: *See—*
Auer, Peter, 3,686,059.

Ulrich Foundation, Inc.: *See—*
Ulrich, Raymond M.; and Ulrich, Solomon D., 3,685,591.

Ulrich, Raymond M.; and Ulrich, Solomon D., to Ulrich Foundation, Inc. Slit trenching and cable laying machine with orbital action plow. 3,685,591, Cl. 172-40.000.

Ulrich, Solomon D.: *See—*
Ulrich, Raymond M.; and Ulrich, Solomon D., 3,685,591.

Ultra-Violet Products, Inc.: *See—*
Boland, Steven H., 3,686,529.

Umahashi, Minoru, to Kabushiki Kaisha Ricoh. Memory and counting device. 3,686,483, Cl. 235-92.00j.

Unger, Richard; Seitz, Georg; Klockow, Michael; and Mehrhof, Werner, to Merck Patent Gesellschaft mit beschrankter Haftung. Sulfuric acid monoesters of tragacanth and process for the preparation thereof. 3,686,164, Cl. 260-234.000.

Uniflo Systems Company: *See—*
Bloomfield, Roger D., 3,685,788.

Union Carbide Corporation: *See—*
Bennett, Everett W., 3,686,253.
Louz· , Dometrios V., 3,685,983.
Morehouse, Edward L., 3,686,254.
Piper, John, 3,686,535.

Union Oil Company of California: *See—*
Knights, Evord F., 3,686,287.

Uniroyal, Inc.: *See—*
Hageman, Howard A., 3,686,325.
Hinckley, Paul D.; Klender, Gerald J.; and Lambiott, Jerry F., 3,686,362.
Juodis, Alter; and Gauch, George J., 3,685,297.
O'Shea, Francis X., 3,686,312.
O'Shea, Francis X., 3,686,313.
Relyea, Douglas I., 3,686,216.

United Control Corporation: *See—*
Bateman, Charles Donald; and Noland, Lyle J., 3,686,626.

United States Banknote Corporation: *See—*
Miller, Hobson, 3,686,125.

United States Gypsum Company: *See—*
Nelsson, Nels, 3,685,234.

United States of America
Agriculture: *See—*
Brown, Roger S.; and Rhodes, Philip L., 3,685,100.
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,686,242.
Army: *See—*
Campagnuolo, Carl J., 3,686,520.
Carmody, Michael A., 3,686,633.
Gikow, Emanuel, 3,686,591.
Goldberg, Ira I.; Marasco, Paul M.; and Pfleger, Kenneth R., 3,686,478.
Hildebrant, Floyd J.; and Chovanec, John J., 3,685,347.
Kelem, Tester S.; and Reade, Stephen E., 3,686,565.
Priebe, Frank K., 3,686,592.
Sayles, David C., 3,686,310.
Walbeck, Calvin; Jacoby, John M.; Gepp, Carl E.; and Robertson, Louis A., 3,685,450.
National Aeronautics and Space Administration: *See—*
Rindner, Wilhelm; Iannini, Americo; and Garfein, Andre, 3,686,542.

United States Steel Corporation: *See—*
Ashworth, James E., 3,685,802.
Patterson, Robert W., 3,685,484.
Pond, Robert B., Sr., 3,685,568.
Shapland, James T.; and United States Steel Corporation, 3,685,707.

Universal Oil Products Company: *See—*
Carson, Don B., 3,685,971.
Hervert, George L., 3,686,354.
Neuzil, Richard W., 3,686,342.
Rosenwald, Robert H., 3,686,315.

Unon Carbde Corporaton: *See—*
Soldatos, Anthon C.; and Burhans, Allson S., 3,686,359.

Upadhyayula, Chainulu Lakshminarasimha; and Perlman, Berry Stuart, to RCA Corporation. Stabilized transferred electron amplifier. 3,686,578, Cl. 330-5.000.

Uralsky Zavod tyazhelogo mashinostroenia imeni S.: *See—*
Niskovskikh, Vitaly Maximovich; Dyshkant, Viktor Fedorovich; and Kuznetsov, Leonid Georgievich, 3,685,571.

Urbanic, John M., to Aluminum Company of America. Automatic slope control arrangement for welding apparatus. 3,686,465, Cl. 219-131.00f.

U.S. Amada, Ltd.: *See—*
Daniels, Dennis, 3,685,380.

U.S. Dynamics, Inc.: *See—*
Blacbert, John E., 3,685,902.

U.S. Philips Corporation: *See—*
Franssen, Nico Valentinus, 3,685,609.
Horowitz, Alexandre; and Beusink, Bernard Joseph, 3,685,265.
Marimes, Johannes Antonius, 3,685,883.
Meulemans, Charles Cornelis Eduard; and Van Der Tas, Johannes Cornelis, 3,685,947.
Sharpless, Graham Trevor, 3,686,661.
Steigman, Peter Edward; Badcock, Frank Robert; and Lamb, David Robert, 3,686,544.
Van Den Plassche, Rudy Johan, 3,686,580.

U.S. Plywood-Champion Papers Inc.: *See—*
Powell, Mabrin P.; and Nauman, Mark R., 3,686,015.

Usov, Vladimir Viktorovich; Zernograd Rostovskoi Oblasti; and Shinevsky, Lev Konstantinovich. Chain for chain transmission. 3,685,362, Cl. 74-253.00r.

Uzina Rulmentul: *See—*
Goguta, Trian, 3,685,339.

Vaerco, Inc.: *See—*
Sarofeen, George M. J., 3,685,214.

Vainer, Savely Abramovich: *See—*
Vainer, Shimon Abramovich; and Vainer, Savely Abramovich, 3,686,504.

Vainer, Shimon Abramovich; and Vainer, Savely Abramovich, to Volgogradsky Nauchno-Issledovatelsky Institute Tekhonologie Mashinostroenia. Photo-electric outline-following apparatus for controlling the movement of an operative unit. 3,686,504, Cl. 250-202.00.

Valli, Roberto. Apparatus for collecting and conveying eggs. 3,685,494, Cl. 119-48.000.

Van Den Plassche, Rudy Johan, to U.S. Philips Corporation. Current amplifier. 3,686,580, Cl. 330-18.000.

Van Der Jagt, Anton, to Westinghouse Electric Corporation. Self-aligned gas assisted lens for laser beam apparatus. 3,685,882, Cl. 350-63.000.

Van Der Tas, Johannes Cornelis: *See—*
Meulemans, Charles Cornelis Eduard; and Van Der Tas, Johannes Cornelis, 3,685,947.

Van Dorp, David Adriaan; Akroyd, Philip; and Mindt, Lothar, to Lever Brothers Company. Flavoring foods by addition of unsaturated aliphatic aldehydes or precursors thereof. 3,686,003, Cl. 99-140.00r.

Van Eygen, Cyrille: *See—*
Vrancken, August; and Van Eygen, Cyrille, 3,686,112.

Van Pelt, Denis L.: *See—*
Rogers, Waldo I.; and Van Pelt, Denis L., 3,686,479.

Van Sickle, Don C. Contour cutting apparatus. 3,685,556, Cl. 143-26.00a.

Van Stavern, Merle H.; Moorer, Henry D.; Miller, Gordon H.; and Gunn, Kenneth M., to Texaco Inc. Method for the separation of oil and water from an emulsion. 3,685,653, Cl. 210-83.000.

Vance, Marion I.: *See—*
Kappelman, Benjamin O.; and Vance, Marion I., 3,685,263.

Vandervelde, Robert E., to Continental Can Company, Inc. Method of and apparatus for removing irregularities in welded seams. 3,685,138, Cl. 29-477.000.

Vanier, Vance R., to A F A Corporation, The. Liquid dispensing apparatus. 3,685,739, Cl. 239-333.000.

Vannest, James L., to Textron Inc. Method for making a roller bearing retainer. 3,685,114, Cl. 29-148.40c.

Varian Associates: *See—*
Taylor, Norman J.; Mann, Joseph K.; and Atwood, Allen W., 3,686,501.

Varon, Albert S.; and Siegal, Burton L., to Crown Metal Manufacturing Co. Hang rail construction and bracket therefor. 3,685,662, Cl. 211-105.100.

Vaud, Janos Kurucz; and Nuechatel, Andre Matthey. Apparatus for manufacturing blarings that are to be used particularly in the watch making industry and for small apparatuses. 3,685,935, Cl. 425-116.000.

Vecchio, Martino; and Stefani, Giancarlo, to Montecatini Edison S.p.A. Process for the preparation of chlorofluoro derivatives of methane. 3,686,338, Cl. 260-653.800.

Vepa AG: *See—*
Carpenter, Mark Richard; and Ludwig, Albert P., 3,685,328.

Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft: *See—*
Hubner, Franz; and Jilek, Walter, 3,685,358.

Verelst, Johan Lodewijk: *See—*
Stievenart, Emile Frans; Mees, Omer Jan; and Verelst, Johan Lodewijk, 3,685,420.

Verzele, Maurice G. E., 1/2 to S.A. PRB. Method of preparation of extracts of hops. 3,686,316, Cl. 260-586.00r.

Vestermark, Anders G. E. Method for separating ionized substances. 3,686,087, Cl. 204-180.00s.

Victa Limited: *See—*
Snodgrass, Kenneth William; Steele, William Henry; Wilson, Alan; and Phelps, Ross Leslie, 3,685,613.

Victor Company of Japan: *See—*
Takahashi, Nobuaki, 3,686,471.

Victor, Fritz Gasselblad Teckn: *See—*
Dahlgren, Lennart G. O., 3,685,423.

Vierstraete, Jean. Apparatus for machining elongated workpieces. 3,685,915, Cl. 408-26.000.

Vining, Roy H.: *See—*
Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, 3,686,023.

Vis, Jan H.; and Loder, Wallace R., Jr., to Standard Oil Company, The. Motor fuel containing diimine additives. 3,685,976, Cl. 44-69.000.

Viscusi, James J.: *See—*
Craven, Harry J.; Hannahan, William F.; and Viscusi, James J., 3,685,931.

Visual Environments, Inc.: *See—*
De Pasquale, Louis, 3,686,505.

Vock, Manfred H.: *See—*
Brodnitz, Michael H.; Pascale, John V.; and Vock, Manfred H., 3,686,323.

Vofsi, David: *See—*
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,269.
Arad, Yael; Levy, Moshe; and Vofsi, David, 3,686,270.

Volgogradsky Nauchno-Issledovatelsky Institute Tekhonologie Mashinostroenia: *See—*
Vainer, Shimon Abramovich; and Vainer, Savely Abramovich, 3,686,504.

Volkswagenwert Aktiengesellschaft: *See—*
Safrata, Leon; Beifuss, Horst; Bormann, Hans; and Rost, Gunter, 3,685,242.

Vollmecke, Hermann: *See—*
Ehm, Karl; and Vollmecke, Hermann, 3,685,378.

Vorderbruegge, Hermann; and Mehrmann, Ludwig, to Heberlein & Co., AG. Apparatus for the treatment of webs or yarns. 3,685,324, Cl. 68-150.000.

Vorobiev, Dmitry Ivanovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Nazarov, Nikolai Grigorievich; Tkach, Khaim Berkovich; Demin, Alexandr Ivanovich; and Vorobiev, Dmitry Ivanovich, 3,685,597.

Vrancken, August; and Van Eygen, Cyrille. Process for polymerizing acrylonitrile. 3,686,112, Cl. 260-32.60n.

Vsesojuzny Nauchno-Issledovatelsky Institut Tegkogo i Textilnogo Mashinostroenija: *See—*
Parshin, Alexei Nikolaevich, 3,685,551.

Vsesojuzny Niftegazovy Nauchno-Issledovatelsky: *See—*
Geshelin, Boris Mikhailovich; Maximov, Mikhail Mikhailovich; Rozenberg, Maxim Davidovich; and Yakovleva, Nadezhda Evgenievna, 3,686,491.

Vuchner, Bernard: *See—*
Jobert, Raymond; and Vuchner, Bernard, 3,686,268.

Vzina Mecanica de Gaz Matana Medias: *See—*
Szumilas, Wladislaw; Adam, Macedon Emil; Lata, Ilie; and Muresan, Gheorghe, 3,685,793.

Wada, Koji; and Ishida, Akira, Kyoto, to Kabushiki-Kaisha Shashin Kagaku Kamigyo-ku. Processor control computer. 3,685,726, Cl. 235-64.700.

Wade, Henry E.: *See—*
Herbert, Denis; and Wade, Henry E., 3,686,072.

Wagenblast, Ernst: *See—*
Bruer, Dirk; Schaible, Siegried; Wagenblast, Ernst; and Hohlwegler, Heinz, 3,685,674.

Wagensommer, Joseph. Novel process copolymerization of alpha olefins and ethylene. 3,686,155, Cl. 260-88.200.

Wahl, Hermann, to Siemens Aktiengesellschaft. Gas laser having a capillary tube with a contracted portion that serves as a mode selector. 3,686,584, Cl. 331-94.500.

Wahlberg, Eric C. Speed reducer and positioning device. 3,686,608, Cl. 338-162.000.

Walbeck, Calvin; Jacoby, John M.; Gepp, Carl E.; and Robertson, Louis A., to United States of America, Army. Floating grenade cup. 3,685,450, Cl. 102-65.000.

Walbridge, Derek John: *See—*
Thompson, Morice William; and Walbridge, Derek John, 3,686,114.

Walcker, Jake J.: *See—*
Shrewsbury, Robert M.; and Walcker, Jake J., 3,685,498.

Walk, Charles R.: *See—*
Buzby, George C., Jr.; Walk, Charles R.; and Smith, Herchel, 3,686,317.

Walker, Robert G.: *See—*
Payne, Stanley D.; Hill, Donald E.; and Walker, Robert G., 3,685,118.

Walker, Wendell C.: *See—*
Davidson, William E.; Walker, Wendell C.; and Foster, Harold S., 3,685,181.
Davidson, William E.; and Walker, Wendell C., 3,685,182.

Wall, Charles A.; and Lutz, F. Norman, to Warner & Swasey Company, The. Wire twister. 3,685,271, Cl. 57-68.000.

Walles, Wilhelm E.; Caiola, Robert J.; and Donald, Harold J., to Dow Chemical Company, The. Sulfonated plastic duplicating masters. 3,685,446, Cl. 101-453.000.

Wallmannsberger, Georg. Detachable gripping means for monocable aerial tramways. 3,685,457, Cl. 104-205.000.

Walls, Sher, Inc.: *See—*
Sherwood, John C., 3,685,223.

Walsh, William L.: *See—*
Cupples, Barrett L.; Murphy, Clarence R.; and Walsh, William L., 3,686,076.
Hay, Russell G.; Mc Nulty, John G.; and Walsh, William L., 3,686,274.
Hay, Russell G.; McNulty, John G.; and Walsh, William L., 3,686,275.

Walss, Margaret: *See—*
Walss, Walter Kourt, 3,685,831.

Walss, Walter Kourt; deceased (by Walss, Margaret; executrix). Toy with a rotating gameboard. 3,685,831, Cl. 273-142.0jb.

Walter, Johann Heinrich: *See—*
Poehler, Guenter; Suter, Hubert; Wirth, Friedrich; and Walter, Johann Heinrich, 3,686,229.

Walter, Kenneth E., to Kennecott Copper Corporation. Apparatus utilizing an air core transformer for determining magnetic material content of a substance. 3,686,563, Cl. 324-13.000.

Walther, Hans - J.; and Liepelt, Klaus - J., to B.A.T. Cigaretten-Fabriken GmbH. Methods and apparatus for the selection of foreign bodies of smaller dimensions, from a main mass. 3,685,650, Cl. 209-74.000.

Wandler, Donald, to McGraw-Edison Company. Mounting arrangement for luminaires. 3,685,858, Cl. 285-27.000.

Warner & Swasey Company, The: *See—*
Wall, Charles A.; and Lutz, F. Norman, 3,685,271.

Warren, William H. Multiple station combination vacuum-pressure system. 3,685,539, Cl. 137-565.000.

Wasson, Burton Kendall: *See—*
Stuart, Ronald Stiles; and Wasson, Burton Kendall, 3,686,176.

Watanabe, Kikuo: *See—*
Takashashi, Yoshinori; Sasaki, Rokuro; Watanabe, Kikuo; and Takizawa, Masau, 3,685,618.

Watarai, Syu: *See—*
Ono, Hisatake; Watarai, Syu; and Osada, Chiaki, 3,686,153.

Wattiez, Daniel: *See—*
Cuvelier, Georges; and Wattiez, Daniel, 3,685,953.

Wayne Manufacturing Company: *See—*
Groce, Ernest F., 3,685,557.

Weatherby, John H.: *See—*
Baer, John S.; and Weatherby, John H., 3,685,622.

Weatherhead Company, The: *See—*
Scanidi, Adam M., 3,685,860.

Webb, Graham: *See—*
Barnaby, Bernard Sydney; Webb, Graham; and Stevenson, Robert Andrew, 3,686,445.

Weber, Erhard: *See—*
Hauptmann, Gerhard; and Weber, Erhard, 3,686,078.

Weber, Horst: *See—*
Schwochow, Friedrich; Heinze, Gerhard; and Weber, Horst, 3,685,963.

Webster, Robert A., to Mallory, P. R., & Co., Inc. Component having terminal insert seal. 3,686,538, Cl. 317-230.000.

Webster, Robert B., to Newell Mfg., Company. Decorative picture hanger assembly. 3,685,781, Cl. 248-497.000.

Wedemeyer, Karlfried: *See—*
Hagedorn, Ferdinand; Wedemeyer, Karlfried; Scherhag, Bernhard; and Hausweiler, Arnold, 3,686,194.

Wegler, Richard: *See—*
Dickore, Karlfried; Wegler, Richard; and Hermann, Gunther, 3,686,201.
Metzger, Carl; Borrmann, Dieter; Wegler, Richard; Eue, Ludwig; and Hack, Helmuth, 3,686,198.

Wei, Peter H. L.: *See—*
Bell, Stanley C.; and Wei, Peter H. L., 3,686,210.

Weil, Ira, to Lever Brothers Company. Novel detergent composition. 3,686,098, Cl. 252-550.000.

Weiland, Gregory L., Jr. Self cleaning dairy stall device. 3,685,493, Cl. 119-28.000.

Weinfurter, Kurt: *See—*
Brunner, Erwin; Platz, Rolf; Taglieber, Kurt; and Weinfurter, Kurt, 3,686,344.

Weintraub, Philip M.; and Challey, John R., to Richardson-Merrell, Inc. 9,10-Diazatetracyclo[6.3.9.$9^{4,11}$.$0^{5,9}$] unedcane compounds. 3,686,185, Cl. 260-203.550.

Weir, Thomas A. Mold separating apparatus. 3,685,939, Cl. 425-214.000.

Weis, Claud Dieter; and Rumpf, Jurg, to Geigy Chemical Corporation. Substituted N-octahydro-1,2,4-methenopentalenyl-(5) ureas as herbicides. 3,685,982, Cl. 71-119.000.

Weiss, Martin Joseph: *See—*
Poletto, John Frank; Allen, George Rodger; Littell, Ruddy; and Weiss, Martin Joseph, 3,686,213.

Weisz, Michel: *See—*
Frenkel, Jean-Mathieu; Logerot, Jean-Marie; Petrequin, Pierre; Syre, Robert; and Weisz, Michel, 3,685,988.

Welling, Leroy U. C., to General Electric Company. Numerical fine-coarse positioning control system. 3,686,547, Cl. 318-594.000.

Wellman Industries, Inc.: *See—*
Johns, Herman S., 3,685,102.

Wendorf, Clarence F.; and Hicks, W Glen. Refuse disposal container and mounting device. 3,685,852, Cl. 280-79.200.

Wenger, Thomas: *See—*
Frick, Wilhelm Ernst; and Wenger, Thomas, 3,686,411.

Wentz, Edward C.: *See—*
Conner, Edmond E.; and Wentz, Edward C., 3,686,600.

Werdehausen, Achim; and Krings, Peter, to Henkel & Cie GmbH. Washing, bleaching and cleansing agents containing poly-(N-tricarballylic acid)-alkyleneimines. 3,686,128, Cl. 252-99.000.

Werner & Mertz GmbH., Firma: *See—*
Schneider, Helmut E., 3,685,933.
Wesemann, Fred A., to Consolidated Products Incorporated. Brush and rug scrubber. 3,685,081, Cl. 15-50.00r.
West Coast Adhesives Company: *See—*
Brown, Elmer T.; and Carroll, Jackson H., 3,686,061.
West, William A., to Du Pont de Nemours, E. I., and Company. Quinacridone containing pigments. 3,686,009, Cl. 106-288.00q.
Westfall, James E., to Continental Can Company. Press-on, twist-off temper indicating closure cap. 3,685,677, Cl. 215-42.000.
Westinghouse Electric Corporation: *See—*
Brown, Ralph D., 3,685,292.
Bruning, Armin M., 3,686,420.
Conner, Edmond E.; and Wentz, Edward C., 3,686,600.
Foster, Newton C., 3,686,045.
Frisch, Erling, 3,685,123.
Gordon, Dale I.; and Smart, Lee W., 3,686,523.
Harrison, John William, 3,685,434.
Kasschau, Kenneth, 3,685,532.
Levine, Samson P.; Kugler, Ralph W.; and Cander, Anthony J., 3,685,376.
Lockie, Arthur M.; and Leonard, Merrill G., 3,686,603.
Mallick, George T., Jr.; Carr, Walter J., Jr; and Miller, Robert C., 3,686,564.
O'Keeffe, Terence W., 3,686,028.
Peterson, Robert S., 3,686,551.
Peterson, Robert S., 3,686,552.
Roland, George W.; Hopkins, Richard H.; and Melamed, Nathan T., 3,686,586.
Spreadbury, Robert J., 3,686,561.
Van Der Jagt, Anton, 3,685,882.
Willis, Thomas G., 3,686,450.
Weston, Charles, and Company Limited: *See—*
Potter, Charles William, 3,685,127.
Whirlpool Corporation: *See—*
Getz, Edward H., 3,686,554.
Whitakercable Corporation: *See—*
Berry, Norman H., 3,686,606.
White, Martin; and Luff, Peter Purnell, to National Research Development Corporation. Production of films by vapor deposition and irradiation. 3,686,022, Cl. 117-93.310.
White, Sheldon S.: *See—*
Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., 3,686,457.
White, Thomas G.: *See—*
Decker, Robert M.; Patena, Michael D.; and White, Thomas G., 3,686,531.
Whitehead & Kales Company: *See—*
Blunden, Donald J., 3,685,856.
Whittaker, Jack D.: *See—*
Loveday, Harry W.; and Whittaker, Jack D., 3,685,167.
Wiegandt, Herbert F. Discharge device for removing compacted bed of particles. 3,685,746, Cl. 241-3.000.
Wiegel, Wolfgang: *See—*
Schindler, Robert; Schmidts, Kurt; and Wiegel, Wolfgang, 3,685,684.
Wiener Metallwarenfabrik Smolka & Co.: *See—*
Smolka, Thomas G.; and Schweizer, Gottfried, 3,685,847.
Wiener, Thomas J.; and Kuhns, Robert C., to Kelly Company, Inc. Non-counterbalanced front-of-dock dockboard. 3,685,077, Cl. 14-71.000.
Wiley, William H.; and Johnson, Franklin W., to Barber Colman Company. Thrust controller for propulsion systems with commonly driven, controllable pitch propellers. 3,686,485, Cl. 235-150.200.
Wilhelm Bofringer Mobelwerkstallen: *See—*
Mehnert, Klaus, 3,685,466.
Wilke, Rajd A., to Koehring Company. Fluid flow controlling device for reversible fluid motors. 3,685,540, Cl. 137-596.130.
Willert, Richard Joseph: *See—*
Kostel, Paul Steven; Borgen, William Earl; and Willert, Richard Joseph, 3,685,258.
Willett, Richard L.: *See—*
Hoppis, Larry; and Willett, Richard L., 3,686,594.
Williams, Albert J., Jr.: *See—*
McMullan, Samuel J.; and Williams, Albert J., Jr., 3,686,568.
Williams, Donald B.: *See—*
Currier, Jonathan E.; and Williams, Donald B., 3,685,254.
Williams, John Edward. Treatment of ingot moulds. 3,686,013, Cl. 117-5.100.
Williams, John S. Production of fibrous logs by continuously passing slurry through a forming chambers. 3,686,070, Cl. 162-293.000.
Williams, Joseph Blair, to Du Pont de Nemours, E. I., and Company. Fire-retardant foam articles. 3,686,067, Cl. 161-160.000.
Willis, Thomas G., to Westinghouse Electric Corporation. Interval timing mechanism with improved cam and cam follower structure. 3,686,450, Cl. 200-38.00r.
Willoughby, Joseph A.: *See—*
Dubuc, Rene A.; White, Sheldon S.; and Willoughby, Joseph A., 3,686,457.
Wilson, Alan: *See—*
Snodgrass, Kenneth William; Steele, William Henry; Wilson, Alan; and Phelps, Ross Leslie, 3,685,613.
Wilson, John E.: *See—*
MacLellan, James A.; and Wilson, John E., 3,685,654.
Wilt, Marvin D., to Teledyne Industries, Inc. Intrusion detector responsive to change in dominant frequency. 3,686,658, Cl. 340-261.000.
Winebrener, Gary L., to General Motors Corporation. Power control system. 3,686,549, Cl. 318-139.000.
Winfree, Jack W.: *See—*
Winfree, Virginia R.; Winfree, Louise W.; and Winfree, Jack W., 3,685,762.
Winfree, Louise W.: *See—*
Winfree, Virginia R.; Winfree, Louise W.; and Winfree, Jack W., 3,685,762.
Winfree, Virginia R.; Winfree, Louise W.; and Winfree, Jack W. Spinning reel. 3,685,762, Cl. 242-84.20d.
Wing, Henry; and Cooper, Ray, to Jade Corporation. Alignment fixture. 3,685,117, Cl. 29-203.00p.
Winkler, Deloss E., to Shell Oil Company. Hydrohalogenated selectively hydrogenated block copolymers. 3,686,366, Cl. 260-880.00b.
Winkler, Frnel R.; and Park, Im K. Composite articles of polyethylene terephthalate and polyamide and methods for making same. 3,686,069, Cl. 161-227.000.
Winstrom, Leon O.: *See—*
Murray, Edward J.; and Winstrom, Leon O., 3,686,318.
Winter, Gerhard: *See—*
Schindler, Herbert; and Winter, Gerhard, 3,685,072.
Wirth, Friedrich: *See—*
Poehler, Guenter; Suter, Hubert; Wirth, Friedrich; and Walter, Johann Heinrich, 3,686,229.
Wirz, Armin, to Rieter Machine Works, Ltd. Method and apparatus for processing a thread on a draw-spin-winding machine. 3,685,752, Cl. 242-36.000.
Wise, Harold L., to Shell Oil Company. Equilibrated soil-gas sampling. 3,685,345, Cl. 73-19.000.
Wisebaker, Robert E.: *See—*
McClellan, Herbert L.; Dom, Harry A.; and Wisebaker, Robert E., 3,685,070.
Witek, Roman J., Jr: *See—*
McCardell, Willard B., Jr.; Bissland, John D.; and Witek, Roman J., Jr, 3,686,619.
Wittich, Willibald: *See—*
Butter, Karl; Wittich, Willibald; and Theiss, Armin, 3,686,081.
Wittman, David: *See—*
Edwards, Webster H.; Miller, Earl A.; Scully, Thomas A.; Vining, Roy H.; and Wittman, David, 3,686,023.
Wolfe, Denis G.; and Eicher, Gerald H., to Robertshaw Controls Company. Fuel control system and valve construction therefor or the like. 3,685,729, Cl. 236-15.00a.
Wollweber, Hartmund; Hiltmann, Rudolf; and Stendel, Wilhelm, to Farbenfabriken Bayer Aktiengesellschaft. N-substituted-2-arylimino oxazolidines. 3,686,199, Cl. 260-307.00f.
Wood, James J. Boat hull protecting apparatus. 3,685,477, Cl. 114-222.000.
Wood, William D.: *See—*
Salenbien, Albert L., Jr.; and Wood, William D., 3,686,653.
Woodle, Robert Alan, to Texaco Inc. Means and method for controlling a solvent refining unit for maximum yield. 3,686,488, Cl. 235-151. 120.
Woodman Company, Inc., The: *See—*
Henry, Nelson R.; and Middour, Donald R., 3,685,250.
Woodruff, Harold Boyd; and Stoudt, Thomas H., to Merck & Co., Inc. Method for inhibiting dental plaque. 3,686,393, Cl. 424-50.000.
Woodson, Riley D. Elastic valve element having variable orifice. 3,685,786, Cl. 251-4.000.
Wootten, John A.: *See—*
Caslow, Joseph H.; Huber, Melvin F.; and Wootten, John A., 3,685,697.
Workman Electronic Products, Incorporated: *See—*
Kaczmarek, Bernard; and Lander, Vern, 3,686,601.
Worldtronic Inc.: *See—*
Salenbien, Albert L., Jr.; and Wood, William D., 3,686,653.
Worms, Philippe. Central heating and cooling system. 3,685,574, Cl. 165-22.000.
Worthen, Richard A.: *See—*
Czuszak, Charles C.; and Worthen, Richard A., 3,685,791.
Worthington, Geoffrey George. Vices. 3,685,817, Cl. 269-139.000.
Wouda, Sally A., to International Telephone and Telegraph Corporation. Holding device for cellophane bags. 3,685,252, Cl. 53-189.000.
Wray, Glenn C.: *See—*
Coons, William R., Jr.; Nelson, Gerald V.; and Wray, Glenn C., 3,686,095.
Wray, James D. Car top camper-boat. 3,685,061, Cl. 5-119.000.
Wriedt, Alfred. Apparatus for lashing down of articles. 3,685,799, Cl. 254-51.000.
Wright, Gerard C.: *See—*
Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., 3,686,678.
Wright, John G.; and Chafin, James M., to Textron Inc., mesne. Horn lifting means for fastener insection machine. 3,685,815, Cl. 269-58.0000.
Wright, Joseph E., Jr.; and Cohee, Donald R., to Opto/Graphics, Inc. Electrophotographic charging easel. 3,685,895, Cl. 355-3.000.
Wuertz, John H., to Mobil Oil Corporation. Insertion and removal of plugs and the like. 3,685,124, Cl. 29-240.000.
Wunderlich, Klaus: *See—*
Hohmann, Walter; Wunderlich, Klaus; and Bien, Hans-Samuel, 3,686,232.

Wunsche, Edgar; Turner, Alfred H.; and Durdin, Lewis H. Unitized electride holder and arm for electric arc furnace electrodes or the like. 3,686,421, Cl. 13-15.000.
Wyss, Otto. Lattice grid assembly. 3,685,243, Cl. 52-665.000.
Xerox Corporation: *See—*
Chen, Philip L., 3,685,406.
Culligan, Robert L., 3,685,897.
Donalies, Daniel J., 3,685,486.
Galen, Joseph J., 3,685,989.
Gonzalez, Ricardo A., 3,685,898.
Hagenbach, Robert Joseph, 3,685,113.
Howell, Richard S.; and Brunner, Robert V., 3,686,676.
Kaupp, Norbett H., 3,685,896.
Marshall, George E.; Perno, Bartholomew J.; and Stokes, Robert G., 3,685,905.
Riley, Bernard J., Jr., 3,686,035.
Robbins, Neal R.; Ring, Howard Daniel; Wright, Gerard C.; Ceelen, Theodore M.; and Hotchkiss, Stuart E., 3,686,678.
Shuey, David R., 3,686,666.
Stange, Klaus K., 3,686,679.
Stover, Raymond W., 3,685,488.
Turner, Lyman H.; Kukucka, William P.; and Summers, James E., 3,685,712.
Yablonsky, Harvey A., to Bristol-Myers Company. Thioglycerol-nitrogen base molecular complex depilatory compositions. 3,686,296, Cl. 260-534.00s.
Yagi, Hajime: *See—*
Matsuhita, Takeshi; and Yagi, Hajime, 3,686,684.
Yakimenko, Leonid Markovich: *See—*
Adaev, Evgeny Ivanovich; Blinov, Alexander Vasilievich; Kamaria, Georgy Mikirtychevich; Alexandrovich, Novoslelov Viktor; and Yakimenko, Leonid Markovich, 3,685,121.
Yakovleva, Nadezhda Evgenievna: *See—*
Geshelin, Boris Mikhailovich; Maximov, Mikhail Mikhailovich; Rozenberg, Maxim Davidovich; and Yakovleva, Nadezhda Evgenievna, 3,686,491.
Yamada, Shizuo; Ono, Isao; Abe, Hiroyuki; Kunihiro, Nobuko; and Tago, Kazuo, to Toyo Soda Manufacturing Co., Ltd. Process for dimerization or co-dimerization of α olefin. 3,686,350, Cl. 260-683.15d.
Yamakawa, Tyoji: *See—*
Hattori, Kenichi; Yamakawa, Tyoji; and Tuji, Akitoshi, 3,686,133.
Yamashita, Yohachi: *See—*
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, 3,686,122.
Yan-Nell Corporation: *See—*
Iannelli, Frank M., 3,685,694.
Yano, Osahiko: *See—*
Deguchi, Masahiro; and Yano, Osahiko, 3,686,432.
Yasui, Kazuomi: *See—*
Hoffmann, Hellmut; Scheinpflug, Hans; Kume, Toyohiko; and Yasui, Kazuomi, 3,686,369.
Yellow Springs Instrument Company, Inc., The: *See—*
Molloy, Everett W., 3,685,346.
Yerouchalmi, David: *See—*
Blattmann, Henri; Javellaud, Jean; and Yerouchalmi, David, 3,686,519.
Yngve, Stig G. J.: *See—*
Kring, Olof; and Yngve, Stig G. J., 3,685,904.
Yoda, Masayuki: *See—*
Tamura, Masabi; Yoda, Masayuki; Shinya, Seishi; and Ayukawa, Yaichi, 3,686,144.
Yokosho Company Ltd.: *See—*
Ishizuka, Shigeru, 3,686,672.
Yokota, Toshiyuki: *See—*
Nakano, Sohta; Fujimoto, Kazumitsu; Otomo, Kazuhiro; Yokota, Toshiyuki; and Shindo, Hiroshi, 3,686,002.
Yokoyama, Katsunori: *See—*
Ichinose, Noboru; Egami, Harutoshi; Yokoyama, Katsunori; and Yamashita, Yohachi, 3,686,122.
Yoshida Kogyo Kabushiki Kaisha: *See—*
Kawakami, Koichi, 3,685,814.
Yoshida, Makoto; Tsuda, Momotoshi; Oishi, Yasushi; and Nakazyo, Kiyoshi, to Fuji Photo Film Co., Ltd. Yellow-forming coupler compounds and color photographic elements containing same. 3,685,995, Cl. 96-100.000.
Yoshida, Masaru: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Yoshida, Masaru; Sakamoto, Masahiro; Kaetsu, Isao; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,686,085.
Yoshida, Shoushi; Iwama, Atsuaki; Odaka, Takashi; and Suda, Tetuo, to Kobe Steel, Ltd. Press for shaping and curing pneumatic tires. 3,685,929, Cl. 425-38.000.
Yoshino, Motohisa: *See—*
Hamada, Yoshio; and Yoshino, Motohisa, 3,686,392.
Yoshino, Takachika; Saito, Shigeru; Sasaki, Yutaka; and Nakamura, Yoshimi, to Nitto Chemical Industry Co., Ltd. Production of attrition resistant solid catalysts containing antimony oxide suitable for use in a fluidized bed reaction. 3,686,138, Cl. 252-45.000.
Young, John, III, to Murdock Machine & Eng. Co. Stress-corrosion tester. 3,685,969, Cl. 23-253.00c.
Young, Patrick Richard: *See—*
Swett, Leo Ralph; Ratajczyk, James Daniel; and Young, Patrick Richard, 3,686,171.
Young, Raymond H., Jr., to Monsanto Company. Substrates coated with a poly(vinyl-halobenzal) based composition. 3,685,990, Cl. 96-1.800.
Young, Richard G.: *See—*
Faul, Thomas L.; and Young, Richard G., 3,686,675.
Faul, Thomas L.; and Young, Richard G., 36,886,675.
Young, Wiels D. Flute. 3,685,388, Cl. 84-384.000.
Young, William G., to Salem Tool Company, The. Locking device for auger latches. 3,685,865, Cl. 287-119.000.
Younkin, James R., to Mitchell Industries, Inc. Open loop flight control system. 3,686,555, Cl. 318-580.000.
Yu, Arthur J.; and Kraft, Paul, to Stauffer Chemical Company. Polyvinyl chloride-polymethacrylonitrile interpolymer processing aid for polyvinyl chloride. 3,686,363, Cl. 260-876.00r.
Yu, Frank K., to Honeywell Inc. Self-Check number generation. 3,686,629, Cl. 340-146.1aj.
Yuhas, Edward Richard, to Fluid Chemical Company, Inc. Marblelized product aerosol dispenser. 3,685,695, Cl. 222-129.000.
Yumde, Yasufumi: *See—*
Nakajima, Toshihiko; and Yumde, Yasufumi, 3,685,886.
Zachar, James E.; and Srode, Walter E., Jr., to National Cash Register Company, The. Retail terminal. 3,686,637, Cl. 340-172.500.
Zaffaroni, Alejandro, to Syntex Corporation. Glycerol esterified with 2-naphthylacetic acids and fatty acids. 3,686,238, Cl. 260-399.000.
Zakaria, Hisham Mohamed Saadellah, to International Standard Electric Corporation. Electromechanical resonator. 3,686,593, Cl. 333-71.000.
Zakaria, Moneeb H.: *See—*
Taber, David; and Zakaria, Moneeb H., 3,686,418.
Zaremski, Donald R.; Beigay, Jack M.; and Heavner, William D., Jr., to Allegheny Ludlum Steel Corporation. Method of making a pressure bonded composite member. 3,685,136, Cl. 29-470.900.
Zaring Industries, Inc.: *See—*
Fathauer, George H., 3,686,571.
Zelenskaya, Olga Ivanovna: *See—*
Gerchenova, Nina Andreevna; Gurvich, Lev Moiseevich; Zelenskaya, Olga Ivanovna; Koretsky, Alexandr Filippovich; Machulsky, Petr Alexeevich; Nesterova, Maria Petrovna; Selifanova, Evdokia Prokofievna; Taubman, Arkady Borisovich; and Furaeva, Ekaterina, 3,68,099.
Zelinski, Raymond J. Fixture for winding fishing line onto a fishing pole reel. 3,685,761, Cl. 242-84.10r.
Zenith Radio Corporation: *See—*
Everett, Peter G., 3,686,579.
Zernograd Rostovskoi Oblasti: *See—*
Usov, Vladimir Viktorovich; Zernograd Rostovskoi Oblasti; and Shinevsky, Lev Konstantinovich, 3,685,362.
Zerwes, Paul J.; and Cohen, Tbeodore A., to Bell Electric Company. Rain tight hooded junction box and cover therefor. 3,686,425, Cl. 174-53.000.
Ziegler, William E. Refuse compactor. 3,685,438, Cl. 100-48.000.
Zimmerman, Arthur W., to A-T-O Inc. Accelerator for dry pipe sprinkler systems. 3,685,586, Cl. 169-17.000.
Zimmerman, Robert V. Granular solids indicator for vertical vessels. 3,685,356, Cl. 73-290.000.
Ziober, Johnnie J.: *See—*
Mott, George E.; and Ziober, Johnnie J., 3,685,300.
Zirkle, Charles L.: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,686,335.
Zoller, John. Ceiling panel lifting device. 3,685,798, Cl. 254-9.00c.
Zubay, Kenneth P. Input-output apparatus. 3,686,630, Cl. 340-149.00a.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 22ND DAY OF AUGUST, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Du Pont de Nemours, E. I., and Co.: *See*—
Klanberg, Frank K. Re. 27,465.
Klanberg, Frank K., to E. I. du Pont de Nemours and Co. Complexes of $B_9H_{11}^{-}$ or $B_9H_{13}S^{-}$ with selected metals and phosphines. Re. 27,465, 8–22–72, Cl. 260—430.
Otis Engineering Corp.: *See*—
Taylor, Donald F., Jr. Re. 27,464.
Rosaen, Borje, O.: *See*—
Rosaen, Nils O., B. O., and O. E. Re. 27,466.
Rosaen, Nils O., B. O., and O. E., to Universal Filters, Inc. Method of manufacturing pleated filters. Re. 27,466, 8–22–72, Cl. 156—74.
Rosaen, Oscar E.: *See*—
Rosaen, Nils O., B. O., and O. E. Re. 27,466.
Taylor, Donald F., Jr., to Otis Engineering Corp. Wells tools. Re. 27,464, 8–22–72, Cl. 166—5.
Universal Filters, Inc.: *See*—
Rosaen, Nils O., B. O., and O. E. Re. 27,466.

LIST OF PLANT PATENTEES

McGill, A., & Son: *See*—
McIntyre, John H. 3,258.
McIntyre, John H. 3,259.
McIntyre, John H. 3,260.
McGill, W. E., Trust, The: *See*—
McIntyre, John H. 3,258.
McIntyre, John H. 3,259.
McIntyre, John H. 3,260.
McIntyre, John H., to The W. E. McGill Trust, d.b.a. A. McGill & Son. Maple tree. 3,258, 8–22–72. Cl. 51.
McIntyre, John H., to The W. E. McGill Trust, d.b.a. A. McGill & Son. Linden tree. 3,259, 8–22–72, Cl. 51.
McIntyre, John H., to The W. E. McGill Trust, d.b.a. A. McGill & Son. Honey locust tree. 3,260, 8–22–72, Cl. 52.
Wakefield, Mary B. Dogwood tree. 3,261, 8–22–72, Cl. 51.

LIST OF DESIGN PATENTEES

Ashton, Harold P.: *See*—
Swett, James B., and Ashton. 224,662.
Ashton, Harold P., and J. B. Swett, to Dart Industries, Inc. Combined food grater and bowl. 224,674, 8–22–72, Cl. D89—1.
Bagguley, Richard B.: *See*—
Mascia, Carmen T., and Bagguley. 224,640.
Mascia, Carmen T., and Bagguley. 224,641.
Mascia, Carmen T., and Bagguley. 224,642.
Mascia, Carmen T., and Bagguley. 224,643.
Mascia, Carmen T., and Bagguley. 224,644.
Mascia, Carmen T., and Bagguley. 224,645.
Ball, Douglas C., to Massey-Ferguson Industries Ltd. Table. 224,636, 8–22–72, Cl. D6—177.
Ball, Douglas C., to Massey-Ferguson Industries, Ltd. Side extension unit for a desk. 224,637, 8–22–72, Cl. D6—199.
Bean, Wilford E.: *See*—
Lorenz, Leo J., and Bean. 224,650.
Lorenz, Leo J., and Bean. 224,651.
Bosley, Denis V., and L. R. Wood, to Mattel, Inc. Operable stand for a model airplane or the like. 224,659, 8–22–72, Cl. D34—15.
Brooks, Riley H. Serving tray for automobile seats. 224,673, 8–22–72, Cl. D87—1.
Burger, Francis J., III, R. L. Stevenson, and B. J. Lehman, to Lockheed Aircraft Corp. Deck plug. 224,668, 8–22–72, Cl. D71—1.
Campbell, Donald S., to Ecodyne Corp. Water conditioner. 224,654, 8–22–72, Cl. D23—3.
Childhood Promotions, Inc.: *See*—
Posner, David William. 224,660.
Cole, Richard H., and E. A. Frand, to Minnesota Mining and Mfg. Co. Combined coaster set, playing card decks and holder therefor. 224,658, 8–22–72, Cl. D34—13.
Continental Can Co., Inc.: *See*—
Mascia, Carmen T., and Bagguley. 224,640.
Mascia, Carmen T., and Bagguley. 224,641.
Mascia, Carmen T., and Bagguley. 224,642.
Mascia, Carmen T., and Bagguley. 224,643.
Mascia, Carmen T., and Bagguley. 224,644.
Mascia, Carmen T., and Bagguley. 224,645.
Cooper, Howard. Bottle. 224,638, 8–22–72, Cl. D9—23.
Corrugated Container Co., The: *See*—
Schieser, Warren J., and Marsh. 224,639.
Dart Industries, Inc.: *See*—
Ashton, Harold P., and Swett. 224,674.
Ashton, Harold P., and Swett. 224,662.
De Jong, Maarten C., to The Stanley Works. Level. 224,663, 8–22–72. Cl. D52—6.
Dixon-Bartlett-Lambrecht, Inc.: *See*—
Ecton, Wiley R. 224,632.
Dragan, William B. Nozzle tip. 224,655, 8–22–72, Cl. D24—1.
Ecodyne Corp.: *See*—
Campbell, Donld S. 224,654.
Ecton, Wiley R., to Dixon-Bartlett-Lambrecht, Inc. Woman's shoe. 224,632, 8–22–72, Cl. D2—297.
Eddy, Robert E. Surgical tray. 224,671, 8–22–72, Cl. D83—1.
Ex-Cell-O Corp.: *See*—
Vollquartz, Verner. 224,646.
Fisher, Janice M. Combined golf ball marker and holder. 224,657, 8–22–72, Cl. 434—5.
Frand, Erwin A.: *See*—
Cole, Richard H., and Frand. 224,658.
Friedman, Stanton, L. Building block. 224,647, 8–22–72, Cl. D13—1.
Geraci, James L., to Xomox Corp. Myringotomy tube inserter. 224,672, 8–22–72, Cl. D83—12.
Grace, W. R., & Co.: *See*—
Hart, Robert L. 224,670.
Graham, John F.: *See*—
Michaud, Albert J., Jr., and Graham. 224,656.
Hart, Robert L., to W. R. Grace & Co. Garment hanger. 224,670, 8–22–72, Cl. D80—8.
Hearn, Verlin A. Combined saddlebag and backrest for a motorcycle or the like. 224,675, 8–22–72, Cl. D90—3.
Hoffman, Lionel B., to Pitney-Bowes, Inc. Photocopy machine. 224,665, 8–22–72, Cl. D61—1.
Honeywell Inc.: *See*—
Michaud, Albert J., and Graham. 224,656.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,648, 8–22–72. Cl. D13—1.
Kohl, Frederick G., and R. K. Marceca, to Rio Enterprises Inc. Chair. 224,633, 8–22–72, Cl. D6—12.
Kohl, Frederick G., and R. K. Marceca, to Rio Enterprises Inc. A-shaped chair. 224,634, 8–22–72. Cl. D6—12.
Kondo, Ryozo. Air-pump for aquarium. 224,667, 8–22–72, Cl. D65—1.
Lehman, Benjamin J.: *See*—
Burger, Francis J., III, Stevenson, and Lehman. 224,668.
Lockheed Aircraft Corp.: *See*—
Burger, Francis J., III., Stevenson, and Lehman. 224,668.
Lorenz, Leo J., and W. E. Bean, to Massey-Ferguson Inc. Combined grille and peripheral gasket for a tractor. 224,650, 8–22–72, Cl. D14—18.
Lorenz, Leo J., and W. E. Bean, to Massey-Ferguson Inc. Grille for a tractor. 224,651, 8–22–72, Cl. D14—18.
Marceca, Robert K.: *See*—
Kohl, Frederick G., and Marceca. 224,633.
Kohl, Frederick G., and Marceca. 224,634.
Marlin Toy Products, Inc.: *See*—
Thornell, Ernest L. 224,661.
Marsh, Jere C.: *See*—
Schieser, Warren J., and Marsh. 224,649.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,640, 8–22–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,641, 8–22–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,642, 8–22–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,643, 8–22–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,644, 8–22–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,645, 8–22–72, Cl. D9—216.

Massey-Ferguson Industries Ltd.: *See*—
Ball, Douglas C. 224,636.
Ball, Douglas C. 224,637.
Lorenz, Leo J., and Bean. 224,650.
Lorenz, Leo J., and Bean. 224,651.
Mattel, Inc.: *See*—
Bosley, Denis V., and Wood. 224,659.
McKee, Robert S.: *See*—
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Hoffman, Lionel B. 224,665.
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De Jong, Maarten C. 224,663.
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Schmeck, Robert E., and Tangard. 224,666.
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 22, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
10 3,685,054
181.4 3,685,055
243R 3,685,056
325 3,685,057

CLASS 3
1 3,685,058
3,685,059

CLASS 4
160 3,685,060

CLASS 5
119 3,685,061
269 3,685,062
345 3,685,063

CLASS 7
17 3,685,064

CLASS 8
31 3,685,951
41C 3,685,952
115 3,685,953
151 3,685,954
163 3,685,955
177AB 3,685,956
179 3,685,957
238 3,685,878

CLASS 9
8R 3,685,065
11A 3,685,066
309 3,685,067
310R 3,685,068
316 3,685,069

CLASS 10
12T 3,685,070

CLASS 12
12 3,685,072
12.5 3,685,073
89 3,685,075
146C 3,685,071

CLASS 13
15 3,686,420
3,686,421

CLASS 14
27 3,685,074
71 3,685,076
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3,685,078

CLASS 15
21D 3,685,079
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104.06R 3,685,083
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CLASS 16
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79 3,685,091
114 3,685,092
147 3,685,093
149 3,685,094

CLASS 17
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11 3,685,096
73 3,685,098
75 3,685,097

CLASS 19
95 3,685,099
98 3,685,100
129R 3,685,101
150 3,685,102

CLASS 21
2.5 3,685,958
7 3,685,959

CLASS 23
230R 3,685,968
253C 3,685,969
253R 3,685,970
288F 3,685,972
288R 3,685,971
301SP 3,685,973

CLASS 24
25.16 3,685,103
205.17 3,685,104
213 3,685,105
241S 3,685,107
265WS 3,685,106

CLASS 26
55R 3,685,108

CLASS 28
1.6 3,685,109

CLASS 29
25.35 3,685,110
27 3,685,111
3,685,698
103C 3,685,112
148.4B 3,685,113
148.4C 3,685,114
160.6 3,685,115
200B 3,685,116
200D 3,685,120
203J 3,685,121
203P 3,685,117
205D 3,685,119
205R 3,685,118
235 3,685,122
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470.9 3,685,136
471.3 3,685,137
477 3,685,138
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598 3,685,142
603 3,685,144
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610 3,685,146
624 3,685,147
628 3,685,148

CLASS 30
43.92 3,685,149
74.1 3,685,150
124 3,685,151
296 3,685,152

CLASS 31
2 3,685,153
89 3,685,154

CLASS 33
11 3,685,155
77 3,685,156
144 3,685,157
178F 3,685,158
181AT 3,685,160
238 3,685,159
288 3,685,161
295 3,685,162

CLASS 34
5 3,685,163
57A 3,685,164
3,685,165
66 3,685,167
168 3,685,166

CLASS 35
7A 3,685,168
8R 3,685,169
29R 3,685,170
35C 3,685,171
48 3,685,172

CLASS 36
7.6 3,685,173
3,685,174
67R 3,685,175
71 3,685,176

CLASS 37
141R 3,685,177
142A 3,685,178

CLASS 38
21 3,685,179
77.3 3,685,182
77.5 3,685,180
3,685,181

CLASS 40
106.53 3,685,183
125F 3,685,185
125H 3,685,184
140 3,685,186
159 3,685,187
201 3,685,188
322 3,685,189

CLASS 42
1R 3,685,190
62 3,685,193
77 3,685,194

CLASS 43
18 3,685,195
42.04 3,685,192
42.05 3,685,191
42.24 3,685,197
43.12 3,685,196
112 3,685,198
114 3,685,199

CLASS 44
62 3,685,975
69 3,685,976

CLASS 46
26 3,685,201
40 3,685,202
156 3,685,203
232 3,685,200

CLASS 47
47 3,685,204

CLASS 48
107 3,685,977

CLASS 49
64 3,685,205
161 3,685,207
489 3,685,206

CLASS 51
5 3,685,208
14 3,685,209
33W 3,685,210
98 3,685,211
103TF 3,685,212
163 3,685,213
206NF 3,685,215
209DL 3,685,214
283 3,685,218
325 3,685,216
328 3,685,219
337 3,685,217

CLASS 52
8 3,685,220
36 3,685,234
39 3,685,235
64 3,685,223
80 3,685,221
90 3,685,222
98 3,685,236
3,685,237
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172 3,685,239
173 3,685,224
208 3,685,225
217 3,685,226
235 3,685,240
242 3,685,227
270 3,685,241
495 3,685,242
506 3,685,228
592 3,685,244
618 3,685,229
665 3,685,243
677 3,685,230
716 3,685,231
3,685,331
742 3,685,232

CLASS 53
14 3,685,245
15 3,685,246
32 3,685,247
33 3,685,233
3,685,333
37 3,685,248
133 3,685,249
180 3,685,250
184 3,685,251
189 3,685,252
228 3,685,253
243 3,685,255
329 3,685,254

CLASS 54
58.95 3,685,270

CLASS 55
62 3,685,256
96 3,685,257
129 3,685,258
198 3,685,259
223 3,685,260
240 3,685,261
390 3,685,262

CLASS 56
1 3,685,263
209 3,685,264
249 3,685,265
330 3,685,266

CLASS 57
34R 3,685,267
3,685,268
58.83 3,685,269
58.95 3,685,272
68 3,685,271
77.4 3,685,273
135 3,685,274
140R 3,685,275
157TS 3,685,276

CLASS 58
23D 3,685,277
24 3,685,278
28D 3,685,279
38 3,685,280
85.5 3,685,281
118 3,685,282
126A 3,685,283

CLASS 59
80 3,685,284
86 3,685,285

CLASS 60
39.02 3,685,287
53WW 3,685,290
53R 3,685,286
54.5P 3,685,289
54.5R 3,685,288
57T 3,685,291
105 3,685,292
229 3,685,293
266 3,685,294
290 3,685,295

CLASS 61
1F 3,685,296
3,685,297
11 3,685,298
45R 3,685,299
46.5 3,685,300
51 3,685,301
53.6 3,685,302
63 3,685,303
70 3,685,304
72.3 3,685,305
3,685,306
72.6 3,685,307

CLASS 62
60 3,685,308
62 3,685,309
114 3,685,310
244 3,685,311
324 3,685,312
345 3,685,313

CLASS 64
12 3,685,314

CLASS 65
1 3,685,978
134 3,685,979

CLASS 66
9B 3,685,315
64 3,685,316
3,685,317
84 3,685,318
87R 3,685,319
95 3,685,320
3,685,321

CLASS 68
2 3,685,322
3D 3,685,323
150 3,685,324
177 3,685,325

CLASS 71
67 3,685,980
88 3,685,981
119 3,685,982

CLASS 72
53 3,685,326
58 3,685,327
88 3,685,328
129 3,685,329
137 3,685,330
216 3,685,332
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325 3,685,336
347 3,685,337
348 3,685,338
354 3,685,339
398 3,685,340
450 3,685,341

CLASS 73
9 3,685,342
15B 3,685,344
15R 3,685,343
19 3,685,345
23 3,685,346
35 3,685,347
67.8R 3,685,348
71.5 3,685,350
113 3,685,349
136C 3,685,351
178R 3,685,352
194E 3,685,353
212 3,685,355
228 3,685,354
290 3,685,356
313 3,685,357
321 3,685,358
354 3,685,359
387 3,685,360
421B 3,685,361

CLASS 74
31 3,685,363
55 3,685,364
230.17E 3,685,366
230.17F 3,685,365
243C 3,685,367
253R 3,685,362
410 3,685,368
492 3,685,369
645 3,685,370
792 3,685,371
863 3,685,372

CLASS 75
.5R 3,685,983
68B 3,685,984
86 3,685,985
96 3,685,986
128G 3,685,987
150 3,685,988

CLASS 76
112 3,685,373

CLASS 79
190 3,685,331

CLASS 82
2 3,685,374
11 3,685,375

CLASS 83
87 3,685,376
210 3,685,377
411 3,685,378
482 3,685,379
552 3,685,380
698 3,685,381

CLASS 84
95 3,685,382
160 3,685,383
211 3,685,384
267 3,685,385
291 3,685,386
312 3,685,387
384 3,685,388
411 3,685,389
421 3,685,390

CLASS 85
77 3,685,391

CLASS 89
28 3,685,392

CLASS 90
1.4 3,685,393
89 3,685,394

CLASS 91
216B 3,685,395
356 3,685,396

CLASS 92
106 3,685,397
145 3,685,238
165 3,685,398
171 3,685,399

CLASS 93
1.5 3,685,400
37R 3,685,401
61R 3,685,402

CLASS 94
13 3,685,403
44 3,685,404
46R 3,685,405

CLASS 95
4.5R 3,685,406
4.5 3,685,407
10C 3,685,408
11R 3,685,409
3,685,410
11V 3,685,411
13 3,685,412
18P 3,685,413
31AC 3,685,414
38 3,685,415
42 3,685,416
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57 3,685,423
64B 3,685,424
64R 3,685,418
3,685,419
89L 3,685,420
89R 3,685,425
90.5 3,685,421

CLASS 96
1PC 3,685,989
1.8 3,685,990
26 3,685,991
29R 3,685,992
33 3,685,993
36.1 3,685,994
100 3,685,995
101 3,685,996
107 3,685,997

CLASS 98
83 3,685,426
94 3,685,427
110 3,685,428

CLASS 99
2R 3,685,998
83 3,686,001
100R 3,685,999
107 3,686,002
134R 3,686,000
140R 3,686,003
3,686,004
214 3,686,005
235R 3,685,429
3,685,430
253 3,685,431
357 3,685,432
408 3,685,433
425 3,685,434

CLASS 100
8 3,685,435

37 3,685,436
45 3,685,437
48 3,685,438
215 3,685,439
232 3,685,440

CLASS 101

38A 3,685,441
119 3,685,442
153 3,685,443
217 3,685,444
415.1 3,685,445
453 3,685,446

CLASS 102

2 3,685,447
24 3,685,448
3,685,449
65 3,685,450
70 3,685,451
70.2R 3,685,452
90 3,685,453

CLASS 104

1R 3,685,454
2 3,685,455
3,685,456
205 3,685,457

CLASS 105

358 3,685,458

CLASS 106

38.3 3,686,006
46 3,686,007
92 3,686,008
288Q 3,686,009
300 3,686,010
306 3,686,011
310 3,686,012

CLASS 107

59 3,685,459

CLASS 108

51 3,685,460
3,685,461
53 3,685,462
56 3,685,463
58 3,685,464
111 3,685,465
156 3,685,466

CLASS 110

8R 3,685,467

CLASS 111

11 3,685,468
87 3,685,469

CLASS 112

121.2 3,685,470
121.29 3,685,471
219A 3,685,472
258 3,685,473
265 3,685,474

CLASS 113

120H 3,685,475

CLASS 114

43.5 3,685,476
144 3,685,478
206R 3,685,479
222 3,685,477

CLASS 115

6.1 3,685,480
35 3,685,481

CLASS 116

114R 3,685,482

CLASS 117

1.7 3,686,014
5.1 3,686,013
36.7 3,686,015
47A 3,686,016
3,686,017
3,686,018
47R 3,686,019
54 3,686,020
76T 3,686,021
93.31 3,686,022
105.3 3,686,023
140A 3,686,024
140R 3,686,025
141 3,686,026
205 3,686,027
212 3,686,028
227 3,686,029
232 3,686,030
234 3,686,031

CLASS 118

1 3,685,483
63 3,685,484
72 3,685,487
637 3,685,485
3,685,486
3,685,488

CLASS 119

2 3,685,489
4 3,685,490
15.6 3,685,491
27 3,685,492
28 3,685,493
48 3,685,494
81 3,685,495

CLASS 121

277 3,685,516

CLASS 122

140R 3,685,496

CLASS 123

8.05 3,685,497
8.09 3,685,498
32EA 3,685,526
90.15 3,685,499
90.27 3,685,500
108 3,685,501
119R 3,685,502
127 3,685,503
136 3,685,504

CLASS 125

11AT 3,685,505

CLASS 126

121 3,685,506
263 3,685,507
378 3,685,508

CLASS 127

38 3,686,032
58 3,686,033

CLASS 128

2F 3,685,509
23 3,685,510
57 3,685,511
142.7 3,685,512
214.4 3,685,513
218M 3,685,514
264 3,685,515
277 3,685,517
303.17 3,685,518

CLASS 130

9A 3,685,519

CLASS 131

10.5 3,685,527
182 3,685,520
187 3,685,521
198A 3,685,522
261B 3,685,523

CLASS 132

9 3,685,524
46A 3,685,525

CLASS 134

2 3,686,034
21 3,686,035

CLASS 136

89 3,686,036
100R 3,686,037
3,686,038
3,686,039

CLASS 137

43 3,685,528
75 3,685,529
98 3,685,530
101.11 3,685,531
107 3,685,532
117 3,685,533
171 3,685,534
265 3,685,535
338 3,685,536
493.6 3,685,537
504 3,685,538
565 3,685,539
596.13 3,685,540
599 3,685,541
599.1 3,685,542
615 3,685,543

CLASS 138

90 3,685,544
99 3,685,545
141 3,685,546
178 3,685,547

CLASS 139

12 3,685,548
24 3,685,549
55 3,685,550
122S 3,685,551
127P 3,685,552
3,685,553

CLASS 141

59 3,685,554
387 3,685,555

CLASS 143

26A 3,685,556

CLASS 144

2N 3,685,557
3D 3,685,558

CLASS 146

2E 3,685,559
124 3,685,560
130 3,685,561

CLASS 148

11.5R 3,686,041
31.55 3,686,042
112 3,686,043

CLASS 149

1 3,686,044

CLASS 150

3 3,685,562
9 3,685,563

CLASS 152

356 3,685,564

CLASS 156

53 3,686,045
72 3,686,046
74 Re.27,466
79 3,686,047
161 3,686,048
167 3,686,049
174 3,686,050
212 3,686,051
3,686,052
218 3,686,053
224 3,686,054
384 3,686,055
499 3,686,056
548 3,686,057
571 3,686,058
581 3,686,059

CLASS 157

1.24 3,685,565
13 3,685,566

CLASS 160

8 3,685,567

CLASS 161

39 3,686,060
56 3,686,061
57 3,686,062
87 3,686,063
89 3,686,064
148 3,686,065
150 3,686,066
160 3,686,067
168 3,686,068
227 3,686,069

CLASS 162

293 3,686,070

CLASS 164

89 3,685,568
120 3,685,569
251 3,685,570
283 3,685,571
312 3,685,572
335 3,685,573

CLASS 165

22 3,685,574
47 3,685,576
48 3,685,575
3,685,577
51 3,685,578
105 3,686,040
122 3,685,579

CLASS 166

.5 3,685,580
5 Re.27,464
272 3,685,581
292 3,685,582
302 3,685,583

CLASS 169

2R 3,685,584
5 3,685,585
17 3,685,586
19 3,685,587
37 3,685,588

CLASS 171

16 3,685,589
63 3,685,590

CLASS 172

40 3,685,591
801 3,685,592

CLASS 173

14 3,685,593
48 3,685,594
103 3,685,595

CLASS 174

15C 3,686,422
3,686,423
36 3,686,424
53 3,686,425
88R 3,686,426
3,686,427
128 3,686,428

CLASS 175

19 3,685,597
57 3,685,596
302 3,685,598
304 3,685,599
307 3,685,600
318 3,685,601

CLASS 176

78 3,686,071

CLASS 177

70 3,685,602
178 3,685,603
184 3,685,604

CLASS 178

2R 3,686,429
5.8A 3,686,430
5.8R 3,686,431
6.6SF 3,686,436
6.6A 3,686,433
3,686,434
6.6P 3,686,432
6.8 3,686,435
7.6 3,686,437
69.6 3,686,438
801 3,685,592

CLASS 179

5R 3,686,439
5.5 3,686,440
15BF 3,686,441
15BY 3,686,442
3,686,443
81R 3,686,444
84R 3,686,445
100.2C 3,686,466
3,686,467
3,686,468
100.2T 3,686,469
100.2Z 3,686,470
100.4ST 3,686,471
115.5DV 3,686,446

CLASS 180

30 3,685,605
114 3,685,606
117 3,685,607

CLASS 181

.5VM 3,685,608
31R 3,685,609
33HC 3,685,612
33E 3,685,614
33H 3,685,611
33K 3,685,613
33L 3,685,610
35R 3,685,615
54 3,685,616

CLASS 184

6.28 3,685,617

CLASS 187

29R 3,685,618

CLASS 188

181A 3,685,619

CLASS 190

48 3,685,620

CLASS 191

2 3,686,447
12.2R 3,686,448

CLASS 192

12B 3,685,621
35 3,685,622
107R 3,685,623

CLASS 193

7 3,685,624

CLASS 194

4C 3,685,626
4 3,685,625
32 3,685,627
101 3,685,628

CLASS 195

62 3,686,072
139 3,686,073

CLASS 197

66 3,685,629

CLASS 198

16 3,685,635
19 3,685,630
31AA 3,685,631
3,685,633
31 3,685,632
41 3,685,634
127 3,685,636
189 3,685,637
213 3,685,638

CLASS 200

11 3,686,449
38R 3,686,450
84B 3,686,452
84R 3,686,451
148B 3,686,453
148R 3,686,454
153S 3,686,455
166C 3,686,456
3,686,457
3,686,458

CLASS 201

1 3,686,074

CLASS 202

158 3,686,075

CLASS 203

12 3,686,076
40 3,686,077
75 3,686,078

CLASS 204

14N 3,686,079
15 3,686,080
16 3,686,081
59R 3,686,082
105M 3,686,083
159.15 3,686,084
159.21 3,686,085
163R 3,686,086
180P 3,686,089
180R 3,686,088
180S 3,686,087
186 3,686,090
195F 3,686,091
197 3,686,092

CLASS 206

16R 3,685,639
44.11 3,685,640
45.25 3,685,641
52F 3,685,642
57 3,685,643
59F 3,685,644
63.2R 3,685,645
65E 3,685,647
65K 3,685,646
78B 3,685,648
3,685,649

CLASS 208

57 3,686,093
206 3,686,094
216 3,686,095

CLASS 209

74 3,685,650
133 3,685,651
166 3,685,652

CLASS 210

19 3,686,115
23 3,686,116
31C 3,686,117
3,686,118
83 3,685,653
97 3,685,654
114 3,685,655
195 3,685,656
289 3,685,657
440 3,685,658
444 3,685,659

CLASS 211

60SK 3,685,667
60R 3,685,660
64 3,685,661
105.1 3,685,662
107 3,685,663
131 3,685,664
177 3,685,665
178 3,685,666

CLASS 212

8A 3,685,668
58 3,685,669

CLASS 214

1PA 3,685,670
6BA 3,685,671
17D 3,685,672
77 3,685,673
314 3,685,674
501 3,685,675

CLASS 215

9 3,685,676
42 3,685,677
43A 3,685,678
56 3,685,679

CLASS 219

10.57 3,686,459
10.77 3,686,460
69G 3,686,461
93 3,686,462
127 3,686,463
131F 3,686,465
131R 3,686,464
213 3,686,472
219 3,686,473
271 3,686,474
272 3,686,475
413 3,686,476
462 3,686,477

CLASS 220

27 3,685,680
45 3,685,681
46R 3,685,682
54 3,685,683
60R 3,685,684
67 3,685,685
89A 3,685,686
97R 3,685,687

CLASS 221

70 3,685,688
90 3,685,689
218 3,685,690
225 3,685,691

CLASS 222

23 3,685,692
54 3,685,693
82 3,685,694
129 3,685,695
136 3,685,696
137 3,685,697
182 3,685,699
213 3,685,700
3,685,701
305 3,685,702
368 3,685,704
373 3,685,703
504 3,685,705
531 3,685,706
559 3,685,707

CLASS 224

42.42R 3,685,708

CLASS 226

50 3,685,709
97 3,685,710
191 3,685,711

CLASS 227

1 3,685,716
3 3,685,712
37 3,685,841

CLASS 228

2 3,685,713
6 3,685,714
37 3,685,715

CLASS 229

2.5 3,685,717
34R 3,685,718
45 3,685,719
62 3,685,720

CLASS 231

7 3,686,558

CLASS 233

3,685,721
23R 3,685,722

CLASS 235

61B 3,685,724
61.11D 3,686,479
61.11E 3,685,723
61.12N 3,686,480
61.5E 3,686,478
62F 3,685,725
64.7 3,685,726
70R 3,685,727
92EA 3,686,482
92FQ 3,686,484
92C 3,686,481
92J 3,686,483
150.2 3,686,485
151.12 3,686,488
151.3 3,686,486
3,686,487
152 3,686,489
156 3,686,490
184 3,686,492
185 3,686,491
193 3,686,493

CLASS 236

12 3,685,728
15A 3,685,729
21 3,685,730
53 3,685,731
68R 3,685,732

CLASS 237

19 3,685,733

CLASS 239

56 3,685,734
109 3,685,735
118 3,685,736
265.19 3,685,737
265.39 3,685,738
333 3,685,739
400 3,685,740
406 3,685,741
407 3,685,742
415 3,685,743
552 3,685,744
587 3,685,745

CLASS 240

10.1 3,686,494
41.35E 3,686,495
51.11R 3,686,496
61.8 3,686,497
84 3,686,498

CLASS 241

3 3,685,746
15 3,685,747
41 3,685,748
65 3,685,749
68 3,685,750
256 3,685,751

CLASS 242

36 3,685,752
45 3,685,755
46.21 3,685,753
55.19A 3,685,754
56.2 3,685,756
68 3,685,757
68.3 3,685,758
78 3,685,759
78.7 3,685,760
84.1R 3,685,761
84.2D 3,685,762

127 3,685,763
129 3,685,764
147R 3,685,765
192 3,685,766
199 3,685,767
201 3,685,768

CLASS 244

3.11 3,685,769
15A 3,685,770
115 3,685,771

CLASS 248

9 3,685,772
26 3,685,773
163 3,685,774
174 3,685,775
178 3,685,776
205 3,685,777
361A 3,685,778
399 3,685,779
3,685,780
497 3,685,781

CLASS 249

86 3,685,782
94 3,685,783
110 3,685,784
129 3,685,785

CLASS 250

41.9ME 3,686,499
3,686,500
49.5AE 3,686,501
52 3,686,502
83.1 3,686,503
202 3,686,504
208 3,686,505

CLASS 251

4 3,685,786
6 3,685,787
28 3,685,788
61.2 3,685,789
67 3,685,790
69 3,685,791
75 3,685,792
164 3,685,793
303 3,685,794
342 3,685,795

CLASS 252

8.5C 3,686,119
8.8 3,686,120
62.9 3,686,122
87 3,686,123
89 3,686,124
90 3,686,125
99 3,686,126
3,686,127
3,686,128
147 3,686,129
171 3,686,130
3,686,131
182 3,686,132
354 3,686,133
378 3,686,134
400 3,686,135
429B 3,686,136
437 3,686,137
455Z 3,686,121
456 3,686,138
511 3,686,139
519 3,686,096
522 3,686,097
550 3,686,098
554 3,686,099

CLASS 254

7R 3,685,796
8B 3,685,797
9C 3,685,798
51 3,685,799
93R 3,685,800
105 3,685,801

CLASS 256

35 3,685,802

CLASS 258

249 3,685,860

CLASS 259

1R 3,685,803
10 3,685,804
85 3,685,805
108 3,685,806
147 3,685,807

CLASS 260

2.1E 3,686,100
2.5AQ 3,686,101
2.5EP 3,686,103
2.5HA 3,686,102
2.5N 3,686,104
17.3 3,686,105
19A 3,686,106
27BB 3,686,107
29.2TN 3,686,108
29.6NR 3,686,109
31.2N 3,686,111
32.6N 3,686,112
33.6AO 3,686,113
33.6AQ 3,686,219
34.2 3,686,114
47CB 3,686,140
47EP 3,686,142
47UP 3,686,141
3,686,143
67U 3,686,145
75NP 3,686,146
3,686,147
78TF 3,686,148
78.4N 3,686,149
78.5R 3,686,150
79.3A 3,686,151
80.81 3,686,152
85.5R 3,686,153
87.5A 3,686,154
88.2R 3,686,155
92.3 3,686,156
93.5S 3,686,157
94.2M 3,686,158
94.9B 3,686,160
94.9C 3,686,159
112R 3,686,144
124R 3,686,161
158 3,686,162
203.55 3,686,185
210AB 3,686,163
234R 3,686,164
239BB 3,686,167
239.1 3,686,168
239.3B 3,686,165
3,686,175
239.3P 3,686,166
239.3R 3,686,169
240A 3,686,170
240G 3,686,171
243C 3,686,172
247.5R 3,686,176
250R 3,686,177
3,686,181
251QB 3,686,178
251A 3,686,173
257 3,686,174
268R 3,686,179
279R 3,686,180
284 3,686,183
288R 3,686,184
293.55 3,686,185
293.58 3,686,186
293.79 3,686,187
294.8C 3,686,188
294.8E 3,686,190
294.8F 3,686,192
294.8K 3,686,191
294.8R 3,686,189
294.9 3,686,193
3,686,194
296D 3,686,195
302SD 3,686,196
302H 3,686,110
306.7 3,686,197
306.8D 3,686,198
307F 3,686,199
308A 3,686,202
308R 3,686,200
3,686,201
309 3,686,203
309.7 3,686,204
310R 3,686,206
325 3,686,207
326.13R 3,686,210
326.14R 3,686,211
326.15 3,686,213
326.5FL 3,686,208
326.83 3,686,214
326.9 3,686,209
327M 3,686,215
330.5 3,686,216
333 3,686,217
335 3,686,218
340.3 3,686,225
340.5 3,686,221
3,686,222
3,686,223
340.7 3,686,224
343.2S 3,686,226
343.2 3,686,247
345.8 3,686,212
346.2R 3,686,227
346.3 3,686,228
346.4 3,686,229
347.7 3,686,230
349 3,686,231
379 3,686,232
391 3,686,233
396R 3,686,234
397.2 3,686,235
397.3 3,686,237
397.5 3,686,236
399 3,686,238
400 3,686,239
403 3,686,205
404.5 3,686,242
409 3,686,240
410.5 3,686,241
429.9 3,686,243
430 Re.27,465
439R 3,686,244
3,686,245
3,686,246
448AD 3,686,249
448A 3,686,248
3,686,250
448.2B 3,686,251
3,686,254
448.2P 3,686,252
448.2R 3,686,253
453A 3,686,255
454 3,686,256
455B 3,686,257
455R 3,686,258
462R 3,686,259
464 3,686,260
465D 3,686,266
465.1 3,686,262
465.3 3,686,263
3,686,264
3,686,265
3,686,267
465.4 3,686,268
465.8A 3,686,269
3,686,270
465.9 3,686,261
471R 3,686,271
3,686,272
473A 3,686,273
475PN 3,686,277
475B 3,686,276
475R 3,686,274
3,686,275
479C 3,686,278
481R 3,686,279
482R 3,686,280
485F 3,686,281
485G 3,686,282
486H 3,686,283
486R 3,686,284
493 3,686,285
3,686,286
497A 3,686,287
501.15 3,686,288
502R 3,686,289
502.4P 3,686,290
516 3,686,291
521R 3,686,292
524R 3,686,293
530N 3,686,294
533N 3,686,295
534S 3,686,296
535H 3,686,297
535R 3,686,298
537R 3,686,299
543R 3,686,300
544M 3,686,301
544Y 3,686,302
553E 3,686,304
553R 3,686,303
555H 3,686,305
561N 3,686,306
3,686,307
562N 3,686,308
564F 3,686,309
566R 3,686,310
570.6 3,686,311
570.9 3,686,312
3,686,313
582 3,686,314
584R 3,686,315
586H 3,686,317
586R 3,686,316
3,686,318
590 3,686,319
592 3,686,320
593R 3,686,321
600 3,686,322
607R 3,686,323
608 3,686,324
3,686,325
609A 3,686,328
609F 3,686,327
609R 3,686,326
3,686,329
611R 3,686,330
612D 3,686,331
622R 3,686,332
638B 3,686,333
641 3,686,334
648F 3,686,336
649R 3,686,335
650R 3,686,337
653.8 3,686,338
668F 3,686,339
672R 3,686,340
673.5 3,686,341
674SA 3,686,342
3,686,343
677XA 3,686,345
679A 3,686,344
680E 3,686,346
3,686,347
681.5 3,686,349
683.15D 3,686,350
3,686,351
3,686,352
3,686,353
683.43 3,686,354
683.7 3,686,348
824R 3,686,355
825 3,686,356
3,686,357
830TW 3,686,358
836 3,686,359
850 3,686,360
873 3,686,361
876B 3,686,364
3,686,365
876R 3,686,362
3,686,363
880B 3,686,366
937 3,686,367
945 3,686,368
3,686,370
964 3,686,369
980 3,686,371

CLASS 261

1 3,685,808
39B 3,685,809
81 3,685,810
114R 3,685,811

CLASS 263

53R 3,686,372

CLASS 264

14 3,686,373
22 3,686,374
32 3,686,375
40 3,686,376
3,686,377
81 3,686,378
89 3,686,379
103 3,686,380
3,686,381
3,686,382
120 3,686,383
122 3,686,384
164 3,686,385
176F 3,686,386
184 3,686,387
237 3,686,388
250 3,686,389
256 3,686,390
315 3,686,391

CLASS 267

36 3,685,812
66 3,685,813

CLASS 269

49 3,685,814
58 3,685,815
133 3,685,816
139 3,685,817

CLASS 270

27 3,685,680
58 3,685,819
61 3,685,818
76 3,685,820

CLASS 271

29 3,685,821
60 3,685,822
80 3,685,823

CLASS 272

59C 3,685,824

CLASS 273

1R 3,685,825
95R 3,685,826
98 3,685,827
101 3,685,828
3,685,829
102R 3,685,830
142JB 3,685,831
176FA 3,685,833
176A 3,685,832
183R 3,685,834
192 3,685,835

CLASS 274

4J 3,685,836

CLASS 277

1 3,685,837
25 3,685,838
27 3,685,839
28 3,685,840
37 3,685,841
74 3,685,842

CLASS 279

1R 3,685,843
4 3,685,844
5 3,685,845

CLASS 280

11.13W 3,685,846
11.35T 3,685,847
3,685,848
3,685,849
11.37H 3,685,850
43.22 3,685,851
79.2 3,685,852
81R 3,685,853
106.5R 3,685,854
3,685,855
179A 3,685,856

CLASS 281

26 3,685,857

CLASS 285

27 3,685,858
3,685,859
249 3,685,860
382 3,685,861

CLASS 287

20.92G 3,685,862
65 3,685,863
100 3,685,864
119 3,685,865
189.36R 3,685,866

CLASS 303

21BE 3,685,869
21F 3,685,867
22R 3,685,868
71 3,685,870

CLASS 305

28 3,685,871

CLASS 307

10LS 3,686,506
106 3,686,507
139 3,686,508
149 3,686,509
3,686,510
202 3,686,511
218 3,686,512
229 3,686,513
238 3,686,515
263 3,686,516
310 3,686,517

CLASS 308

6R 3,685,872
8 3,685,873
9 3,685,874
3,685,875
37 3,685,876
201 3,685,877
238 3,685,878

CLASS 310

9.8 3,686,518
11 3,686,519
15 3,686,520
46 3,686,521
54 3,686,522
72 3,686,523
154 3,686,524
232 3,686,514

CLASS 312

245 3,685,879

CLASS 313

92B 3,686,525

CLASS 315

18 3,686,526
31R 3,686,527
111 3,686,528
115 3,686,529
357 3,686,683

CLASS 316

19 3,685,880
3,685,881

CLASS 317

16 3,686,530
27R 3,686,531
70 3,686,532
100 3,686,533
123 3,686,534
230 3,686,535
3,686,536
3,686,538
231 3,686,537
234R 3,686,539
3,686,540
3,686,541
235N 3,686,543
235R 3,686,542
3,686,544
3,686,545
3,686,684

CLASS 318

16 3,686,546
138 3,686,548
139 3,686,549
148 3,686,550
174 3,686,551
3,686,552
199 3,686,553
327 3,686,554
580 3,686,555
594 3,686,547
595 3,686,556
599 3,686,557

CLASS 321

7 3,686,558
8R 3,686,559
18 3,686,560

CLASS 323

6 3,686,561

CLASS 324

3,686,562
13 3,686,563
41 3,686,564
79D 3,686,565
94 3,686,566
96 3,686,567
99R 3,686,568
126 3,686,569
132 3,686,570

CLASS 325

32 3,686,571
321 3,686,572
395 3,686,573
421 3,686,574
459 3,686,575

CLASS 328

134 3,686,576
151 3,686,577

CLASS 330

5 3,686,578
5.5 3,686,579
18 3,686,580
63 3,686,581
142 3,686,582

CLASS 331

57 3,686,583
94.5 3,686,584
3,686,585
3,686,586
117R 3,686,587

CLASS 332

9R 3,686,588

CLASS 333

21R 3,686,589
24.1 3,686,590
70 3,686,591
71 3,686,592
3,686,593
84M 3,686,594
98BE 3,686,596
98R 3,686,595

CLASS 335

230 3,686,597

CLASS 336

58 3,686,598
70 3,686,600
96 3,686,599

CLASS 337

66 3,686,601
3,686,602
201 3,686,603
3,686,604
334 3,686,605

CLASS 338

35 3,686,606
66 3,686,607
162 3,686,608

CLASS 339

14R 3,686,609
17CF 3,686,610
3,686,612
17F 3,686,611
21R 3,686,613
3,686,614
31B 3,686,615
38 3,686,616
49R 3,686,617
53 3,686,618
59M 3,686,619
60R 3,686,620
67 3,686,621
177E 3,686,623
177R 3,686,624
217R 3,686,622
275B 3,686,625

CLASS 340

27NA 3,686,626
31R 3,686,627
53 3,686,628
146.1AJ 3,686,629
146.3H 3,686,631
147R 3,686,632
149A 3,686,630
168CC 3,686,633
171R 3,686,634
3,686,635
172.5 3,686,636
3,686,637
3,686,638
3,686,639
3,686,640
3,686,641
173FF 3,686,645
173LS 3,686,643
173PL 3,686,646
173R 3,686,642
3,686,644
174M 3,686,647

174.1B 3,686,682
174.1C 3,686,648
3,686,649
3,686,651
174.1J 3,686,650
213Q 3,686,653
213R 3,686,652
213.1 3,686,654
237R 3,686,655
240 3,686,656
248A 3,686,657
253R 3,686,685
261 3,686,658
274 3,686,659
3,686,660
324A 3,686,662
324R 3,686,661
3,686,686
343 3,686,663
347AD 3,686,664
3,686,665
384E 3,686,666
409 3,686,667
420 3,686,668

CLASS 343

5SA 3,686,669
113R 3,686,670
117 3,686,671
225 3,686,672
807 3,686,673
880 3,686,688
895 3,686,674

CLASS 346

1 3,686,675
74ES 3,686,676
3,686,678
74M 3,686,677
139A 3,686,679
140 3,686,680
141 3,686,681

CLASS 350

63 3,685,882
150 3,685,883
214 3,685,884
271 3,685,885
315 3,685,886

CLASS 351

6 3,685,887
47 3,685,889

CLASS 352

38 3,685,888
79 3,685,890
91 3,685,891

CLASS 353

19 3,685,892
120 3,685,893

CLASS 355

3 3,685,894
3,685,895
3,685,896
3,685,897
3,685,898
17 3,685,907
32 3,685,899
3,685,900
38 3,685,901
64 3,685,902
66 3,685,903
74 3,685,904
75 3,685,905
103 3,685,906
107 3,685,908

CLASS 356

28 3,685,909
75 3,685,910
86 3,685,911
157 3,685,912

CLASS 401

190 3,685,913
197 3,685,914

CLASS 408

26 3,685,915
72 3,685,916
150 3,685,917
181 3,685,918

CLASS 415

53 3,685,919
147 3,685,920
159 3,685,921

CLASS 417

223 3,686,687
273 3,685,923
299 3,685,924
302 3,685,925
424 3,685,926

CLASS 418

15 3,685,927
18 3,685,928
113 3,685,922

CLASS 423

7 3,685,962
127 3,685,961
158 3,685,964
229 3,685,960
302 3,685,974
329ON 3,685,963
580ON 3,685,966
3,685,967
605 3,685,965
3,685,965

CLASS 424

16 3,686,392
50 3,686,393
89 3,686,394
101 3,686,395
118 3,686,396
180 3,686,397
185 3,686,398
248 3,686,399
250 3,686,400
3,686,401
3,686,402
3,686,403
262 3,686,404
263 3,686,405
266 3,686,406
3,686,407
272 3,686,408
3,686,409
273 3,686,410
3,686,411
274 3,686,182
283 3,686,412
300 3,686,413
319 3,686,414
320 3,686,415
322 3,686,418
329 3,686,416
342 3,686,417
356 3,686,419

CLASS 425

38 3,685,929
71 3,685,930
89 3,685,931
109 3,685,932
3,685,933
111 3,685,934
116 3,685,935
167 3,685,937
185 3,685,938
195 3,685,936
214 3,685,939
218 3,685,940
245 3,685,941
276 3,685,942
326 3,685,943
410 3,685,944

CLASS 431

6 3,685,945
8 3,685,946
95 3,685,947
285 3,685,950
344 3,685,948
349 3,685,949

CLASSIFICATION OF DESIGNS

D 2— 297 224,632
D 6— 12 224,633
224,634
56 224,635
177 224,636
199 224,637
D 9— 23 224,638
175 224,639
216 224,640
224,641
224,642
224,643
224,644
224,645
218 224,646
D13— 1 224,647
224,648
D14— 3 224,649
18 224,650
224,651
D15— 1 224,652
D16— 3 224,653
D23— 224,654
D24— 1 224,655
D26— 5 224,656
D34— 224,657
13 224,658
15 224,659
224,660
224,661
D44— 224,662
D52— 6 224,663
D61— 1 224,664
224,665
D64— 11 224,666
D65— 1 224,667
D71— 224,668
D74— 9 224,669
D80— 8 224,670
D83— 1 224,671
12 224,672
D87— 1 224,673
D89— 224,674
D90— 3 224,675

CLASSIFICATION OF PLANTS

P. — 51 3,258
P. — 3,259
P. — 3,261
P. — 52 3,260

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,685,484
3,686,310
3,686,538
2 : 3,685,871
4 : 3,685,263
3,685,616
3,685,784
3,685,961
3,686,447
5 : 3,685,092
3,685,831
6 : 3,685,054
3,685,059
3,685,078
3,685,103
3,685,104
3,685,120
3,685,139
3,685,141
3,685,145
3,685,153
3,685,154
3,685,162
3,685,168
3,685,176
3,685,180
3,685,181
3,685,182
3,685,189
3,685,200
3,685,209
3,685,222
3,685,223
3,685,257
3,685,260
3,685,282
3,685,287
3,685,294
3,685,301
3,685,304
3,685,305
3,685,352
3,685,355
3,685,361
3,685,391
3,685,401
3,685,462
3,685,476
3,685,477
3,685,478
3,685,497
3,685,498
3,685,500
3,685,512
3,685,531
3,685,532
3,685,541
3,685,544
3,685,556
3,685,557
3,685,559
3,685,560
3,685,566
3,685,569
3,685,611
3,685,624
3,685,652
3,685,660
3,685,668
3,685,670
3,685,685
3,685,700
3,685,701
3,685,716
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3,685,737
3,685,749
3,685,774
3,685,781
3,685,782
3,685,785
3,685,787
3,685,798
3,685,802
3,685,807
3,685,808
3,685,835
3,685,859
3,685,869
3,685,870
3,685,879
3,685,899
3,685,901
3,685,910
3,685,911
3,685,925
3,685,962
3,685,974
3,686,016
3,686,048
3,686,068
3,686,070
3,686,091
3,686,092
3,686,115
3,686,118
3,686,159
3,686,183
3,686,193
3,686,215
3,686,238
3,686,278
3,686,287
3,686,351
3,686,365
3,686,366
3,686,376
3,686,398
3,686,448
3,686,469
3,686,479
3,686,494
3,686,501
3,686,509
3,686,516
3,686,528
3,686,529
3,686,569
3,686,587
3,686,594
3,686,611
3,686,638
3,686,648
3,686,649
3,686,650
3,686,651
3,686,669
3,686,674
3,686,682
3,686,688
8 : 3,685,057
3,685,356
3,685,604
3,685,608
3,685,803
3,686,470
3,686,631
9 : 3,685,064
3,685,114
3,685,147
3,685,193
3,685,254
3,685,278
3,685,314
3,685,343
3,685,392
3,685,482
3,685,522
3,685,530
3,685,547
3,685,646
3,685,671
3,685,688
3,685,698
3,685,723
3,685,825
3,685,877
3,685,878
3,685,878
3,685,893
3,686,044
3,686,066
3,686,071
3,686,131
3,686,297
3,686,312
3,686,313
3,686,325
3,686,363
3,686,414
3,686,435
3,686,481
3,686,514
3,686,562
3,686,608
3,686,618
10 : Re.27,465
3,685,109
3,685,966
3,685,967
3,686,009
3,686,109
3,686,156
3,686,231
3,686,234
3,686,249
3,686,255
3,686,280
3,686,303
3,686,336
3,686,415
11 : 3,686,161
12 : 3,685,081
3,685,129
3,685,143
3,685,146
3,685,169
3,685,186
3,685,198
3,685,226
3,685,236
3,685,336
3,685,480
3,685,489
3,685,563
3,685,629
3,685,647
3,685,696
3,685,707
3,685,708
3,685,739
3,685,762
3,685,783
3,686,113
3,686,219
3,686,220
3,686,372
3,686,430
3,686,486
3,686,573
3,686,597
3,686,635
3,686,681
13 : 3,685,096
3,685,208
3,685,229
3,685,245
3,685,250
3,685,318
3,685,436
3,685,815
3,685,990
3,686,534
16 : 3,685,195
3,685,492
17 : 3,685,061
3,685,082
3,685,093
3,685,138
3,685,155
3,685,178
3,685,184
3,685,202
3,685,228
3,685,234
3,685,261
3,685,308
3,685,309
3,685,334
3,685,335
3,685,396
3,685,397
3,685,400
3,685,508
3,685,513
3,685,542
3,685,591
3,685,592
3,685,662
3,685,677
3,685,710
3,685,766
3,685,768
3,685,773
3,685,777
3,685,795
3,685,824
3,685,827
3,685,829
3,685,843
3,685,891
3,685,894
3,685,895
3,685,903
3,685,906
3,685,934
3,685,969
3,685,971
3,685,972
3,686,015
3,686,041
3,686,135
3,686,171
3,686,187
3,686,259
3,686,315
3,686,342
3,686,354
3,686,360
3,686,409
3,686,418
3,686,425
3,686,433
3,686,436

3,686,449
3,686,462
3,686,467
3,686,485
3,686,495
3,686,506
3,686,530
3,686,571
3,686,574
3,686,575
3,686,579
3,686,596
3,686,601
3,686,609
3,686,612
3,686,625
3,686,660
18 : 3,685,118
3,685,119
3,685,238
3,685,253
3,685,340
3,685,341
3,685,370
3,685,398
3,685,502
3,685,528
3,685,535
3,685,607
3,685,676
3,685,702
3,685,790
3,685,826
3,685,945
3,686,030
3,686,209
3,686,226
3,686,247
3,686,353
3,686,403
3,686,404
3,686,540
3,686,546
3,686,628
3,686,685
19 : 3,685,128
3,685,204
3,685,232
3,685,351
3,685,428
3,685,429
3,685,430
3,685,554
3,685,561
3,685,565
3,685,592
3,685,596
3,685,626
3,685,659
3,686,620
20 : 3,685,084
3,685,363
3,685,469
3,685,577
3,685,686
3,685,786
3,685,916
3,685,981
3,686,143
3,686,154
3,686,416
3,686,480
3,686,616
21 : 3,685,196
3,685,427
3,685,460
3,686,340
3,686,477
3,686,536
3,686,656
22 : 3,685,098
3,685,100
3,685,115
3,685,300
3,685,306
3,685,580
3,685,595
3,686,121
3,686,248
3,686,250
3,686,341
3,686,343
3,686,348
3,686,352
3,686,451
24 : 3,685,163
3,685,310
3,685,421
3,685,519
3,685,568
3,685,736
3,685,804
3,685,882
3,685,912
3,686,520
25 : 3,685,075

3,685,175
3,685,216
3,685,259
3,685,388
3,685,395
3,685,410
3,685,412
3,685,416
3,685,472
3,685,475
3,685,487
3,685,510
3,685,514
3,685,539
3,685,585
3,685,588
3,685,628
3,685,657
3,685,699
3,685,722
3,685,888
3,685,889
3,685,991
3,685,992
3,686,046
3,686,253
3,686,384
3,686,457
3,686,473
3,686,490
3,686,542
3,686,585
3,686,629
3,686,639
3,686,646
26 : Re.27,466
3,685,068
3,685,125
3,685,197
3,685,217
3,685,241
3,685,262
3,685,344
3,685,354
3,685,369
3,685,377
3,685,385
3,685,393
3,685,438
3,685,446
3,685,470
3,685,499
3,685,558
3,685,605
3,685,606
3,685,615
3,685,619
3,685,637
3,685,656
3,685,712
3,685,800
3,685,809
3,685,812
3,685,832
3,685,851
3,685,856
3,685,900
3,685,984
3,685,999
3,686,000
3,686,024
3,686,034
3,686,037
3,686,038
3,686,039
3,686,052
3,686,175
3,686,197
3,686,239
3,686,279
3,686,327
3,686,356
3,686,362
3,686,475
3,686,484
3,686,549
3,686,554
3,686,570
3,686,607
3,686,619
3,686,653
3,686,671
3,686,686
27 : 3,685,199
3,685,237
3,685,450
3,685,493
3,685,590
3,685,639
3,685,640
3,685,681
3,685,687
3,685,704
3,685,719
3,685,734
3,685,758

3,685,780
3,685,788
3,685,908
3,685,913
3,685,939
3,685,993
3,686,001
3,686,049
3,686,129
3,686,192
3,686,427
3,686,498
3,686,630
28 : 3,685,150
29 : 3,685,291
3,685,293
3,685,431
3,685,533
3,685,587
3,685,649
3,685,821
3,685,998
3,686,040
3,686,235
3,686,267
3,686,282
3,686,332
3,686,413
3,686,420
30 : 3,685,855
3,686,134
31 : 3,685,131
3,685,187
3,685,220
3,685,658
3,685,672
3,685,741
3,686,508
3,686,615
33 : 3,685,321
3,685,342
3,685,996
3,686,527
34 : 3,685,056
3,685,066
3,685,085
3,685,088
3,685,124
3,685,137
3,685,211
3,685,218
3,685,235
3,685,251
3,685,296
3,685,302
3,685,338
3,685,347
3,685,368
3,685,576
3,685,583
3,685,602
3,685,622
3,685,643
3,685,648
3,685,666
3,685,694
3,685,740
3,685,957
3,685,964
3,685,975
3,686,004
3,686,027
3,686,069
3,686,080
3,686,107
3,686,110
3,686,120
3,686,130
3,686,136
3,686,142
3,686,150
3,686,152
3,686,155
3,686,173
3,686,177
3,686,178
3,686,186
3,686,188
3,686,196
3,686,203
3,686,207
3,686,211
3,686,216
3,686,225
3,686,230
3,686,233
3,686,236
3,686,237
3,686,242
3,686,244
3,686,276
3,686,283
3,686,296
3,686,308
3,686,309
3,686,323

3,686,324
3,686,326
3,686,331
3,686,334
3,686,335
3,686,359
3,686,368
3,686,370
3,686,385
3,686,393
3,686,406
3,686,407
3,686,434
3,686,437
3,686,440
3,686,511
3,686,537
3,686,539
3,686,543
3,686,565
3,686,578
3,686,590
3,686,591
3,686,592
3,686,613
3,686,624
3,686,633
3,686,645
3,686,654
3,686,680
35 : 3,685,931
36 : 3,685,055
3,685,097
3,685,108
3,685,113
3,685,132
3,685,140
3,685,148
3,685,152
3,685,161
3,685,188
3,685,203
3,685,207
3,685,212
3,685,219
3,685,221
3,685,230
3,685,244
3,685,252
3,685,284
3,685,386
3,685,390
3,685,406
3,685,414
3,685,415
3,685,486
3,685,488
3,685,501
3,685,520
3,685,529
3,685,562
3,685,581
3,685,593
3,685,594
3,685,603
3,685,664
3,685,695
3,685,746
3,685,759
3,685,771
3,685,775
3,685,834
3,685,836
3,685,861
3,685,896
3,685,897
3,685,898
3,685,902
3,685,905
3,685,989
3,685,997
3,686,012
3,686,020
3,686,035
3,686,098
3,686,106
3,686,125
3,686,168
3,686,184
3,686,212
3,686,213
3,686,223
3,686,227
3,686,251
3,686,254
3,686,258
3,686,272
3,686,281
3,686,318
3,686,337
3,686,355
3,686,443
3,686,452
3,686,487
3,686,493
3,686,505

3,686,550
3,686,551
3,686,552
3,686,566
3,686,605
3,686,617
3,686,627
3,686,636
3,686,640
3,686,641
3,686,663
3,686,666
3,686,675
3,686,676
3,686,678
3,686,679
37 : 3,685,099
3,685,170
3,685,325
3,685,380
3,685,387
3,685,442
3,685,463
3,685,490
3,685,527
3,685,682
3,685,755
3,685,810
3,686,017
3,686,377
3,686,450
3,686,576
3,686,652
38 : 3,685,365
39 : 3,685,070
3,685,079
3,685,126
3,685,134
3,685,142
3,685,144
3,685,206
3,685,213
3,685,246
3,685,271
3,685,288
3,685,303
3,685,311
3,685,346
3,685,384
3,685,434
3,685,440
3,685,461
3,685,464
3,685,507
3,685,524
3,685,545
3,685,564
3,685,586
3,685,623
3,685,632
3,685,635
3,685,665
3,685,679
3,685,697
3,685,714
3,685,747
3,685,754
3,685,757
3,685,760
3,685,761
3,685,813
3,685,819
3,685,828
3,685,841
3,685,841
3,685,860
3,685,860
3,685,864
3,685,865
3,685,876
3,685,880
3,685,887
3,685,917
3,685,920
3,685,923
3,685,924
3,685,936
3,685,941
3,685,978
3,685,979
3,685,983
3,686,006
3,686,025
3,686,043
3,686,054
3,686,058
3,686,096
3,686,097
3,686,105
3,686,124
3,686,158
3,686,169
3,686,185
3,686,185
3,686,214
3,686,295

3,686,306
3,686,307
3,686,345
3,686,374
3,686,389
3,686,391
3,686,476
3,686,531
3,686,558
3,686,558
3,686,600
3,686,637
3,686,643
40 : 3,685,091
3,685,433
3,685,481
3,685,853
3,686,008
3,686,082
3,686,083
3,686,090
3,686,245
3,686,346
3,686,379
41 : 3,685,110
3,685,177
3,685,264
3,685,266
3,685,313
3,685,424
3,685,703
3,685,914
3,686,061
3,686,510
42 : 3,685,058
3,685,094
3,685,105
3,685,117
3,685,122
3,685,123
3,685,136
3,685,165
3,685,190
3,685,238
3,685,292
3,685,307
3,685,328
3,685,337
3,685,353
3,685,359
3,685,360
3,685,366
3,685,376
3,685,379
3,685,449
3,685,458
3,685,471
3,685,534
3,685,536
3,685,620
3,685,627
3,685,661
3,685,705
3,685,720
3,685,729
3,685,744
3,685,764
3,685,791
3,685,805
3,685,822
3,685,840
3,685,857
3,685,918
3,685,946
3,685,952
3,685,960
3,685,994
3,686,023
3,686,028
3,686,031
3,686,045
3,686,076
3,686,111
3,686,151
3,686,165
3,686,180
3,686,210
3,686,224
3,686,274
3,686,275
3,686,285
3,686,286
3,686,288
3,686,292
3,686,301
3,686,314
3,686,317
3,686,330
3,686,361
3,686,380
3,686,381
3,686,382
3,686,429
3,686,454
3,686,456
3,686,465

3,686,478
3,686,507
3,686,513
3,686,523
3,686,524
3,686,541
3,686,557
3,686,561
3,686,564
3,686,568
3,686,586
3,686,599
3,686,603
3,686,634
3,686,665
43 : 3,685,067
44 : 3,685,106
3,685,297
3,685,549
3,685,892
3,686,018
45 : 3,685,089
3,685,102
3,685,130

3,685,467
3,685,468
3,685,644
3,685,796
3,686,535
46 : 3,685,258
3,685,383
47 : 3,685,179
3,685,194
3,685,326
3,685,789
3,685,930
3,686,021
3,686,095
3,686,329
3,686,373
48 : Re.27,464
3,685,133
3,685,172
3,685,174
3,685,256
3,685,332
3,685,345

3,685,491
3,685,538
3,685,567
3,685,578
3,685,582
3,685,584
3,685,598
3,685,599
3,685,600
3,685,601
3,685,621
3,685,673
3,685,690
3,685,959
3,685,977
3,686,032
3,686,047
3,686,065
3,686,067
3,686,100
3,686,101
3,686,137
3,686,160

3,686,243
3,686,263
3,686,284
3,686,347
3,686,358
3,686,488
3,686,503
3,686,518
3,686,555
3,686,644
3,686,658
49 : 3,685,087
3,685,404
3,685,516
3,685,517
3,685,942
3,686,563
50 : 3,685,667
51 : 3,685,074
3,685,214
3,685,239
3,685,275
3,685,319

3,685,329
3,685,439
3,685,453
3,685,521
3,685,653
3,685,968
3,686,290
3,686,517
3,686,547
53 : 3,685,215
3,685,255
3,685,312
3,685,645
3,685,680
3,685,680
3,686,119
3,686,626
3,686,677
55 : 3,685,077
3,685,364

3,685,371
3,685,375
3,685,426
3,685,437
3,685,506
3,685,540
3,685,617
3,685,651
3,685,717
3,685,776
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3,685,818
3,685,858
3,685,909
3,686,050
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3,686,139
3,686,322
3,686,468
3,686,556
3,686,604
3,686,606
3,686,647
3,686,668
56 : 3,685,745
3,685,852
58 : 3,685,756

Design Patents

6 : 224,659
224,675
8 : 224,635
9 : 224,655
224,663
224,666
17 : 224,638

224,640
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18 : 224,653
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19 : 224,671
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24 : 224,632
25 : 224,652
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27 : 224,654
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34 : 224,660

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36 : 224,633
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39 : 224,639

224,672
44 : 224,662
224,674
48 : 224,647
53 : 224,668
55 : 224,661

Plant Patents

25 : 3,261

41 : 3,258

3,259

3,260

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